Tel: Fax:
Email:

Transmittal

Expansion Joint Product Data Sheets

Number	60445
Project Name	MD-SUITLAND-4600 Silver Hill - N-Expansion Joint Repair & Replacement
Address Information	
Notes	
Tel:	Fax:

DETAILS

Transmittal Title	Expansion Joint Product Data Sheets
Number	002
Number of Items	0
Sender Company	R11
Sender Contact	Andre Thomas
Send Date	Thursday, August 13, 2020
Purpose	
Purpose Description	Record Purposes
Instructions	Refer to yellow note on document on product submittal cover sheet.
Notes	Approved as Noted.
Sender Reference	

GENERAL

Number	60445
Project Name	MD-SUITLAND-4600 Silver Hill - N-Expansion Joint Repair & Replacement

Expansion Joint Product Data Sheets

Created By	Andre Thomas
Creation Date	Thursday, August 13, 2020 7:45 AM
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AUTHOR INFORMATION

Created By	Andre Thomas
Company Name	R11

ATLANTIC
REFINISHING & RESTORATION, INC.

PRODUCT SUBMITTAL COVER SHEET

4600 Silver Hill Road
4600 Silver Hill Road
Suitland, MD 20746

To:	**From:**
(b) (6) Cinnovas Development Group, LLC 1717 K Street, N.W. Suite 900 Washington, DC 20006	Atlantic Refinishing and Restoration 6640 Ammendale Rd Beltsville, MD 20705
Date: August 12, 2020	**Submittal No:** ☒ New Submittal ☐ Resubmittal
	Specification Section: SS

☒ Product Data ☐ Shop Drawing ☐ Samples ☐ For Record

Spec. and Para. No	Description of Item	Contract Variation (y/n)
	Expansion Joint Material – Emshield DFR2 System – PD/SDS	N
	Expansion Joint Asphalt Repair Material – Emcrete – PD/SDS	N

6640 Ammendale Rd, Beltsville MD 20705
301-843-8331 Fax: 301-870-8156

US Patents: 9,670,666 9,644,368 9,637,915 9,528,262 9,068,297 8,739,495 C1 Patent Pending

A SIKA COMPANY

PRODUCT DATA Emshield™ DFR2 System

EMSHIELD DFR2 sample shown here is displayed in substrate mock-up

Product Description

Emshield DFR2 is a UL-certified 2-hour fire-rated, watertight sound suppressing, expansion joint.

Emshield DFR2 features a traffic-grade silicone sealing surface on both the upper and lower faces, adhered to a fire-retardant impregnated foam backing.

The system is installed into epoxy adhesive field-applied onto the joint faces. A field-injected silicone sealant band seals the bellows to the substrate at the traffic surface. (NOTE: DFR2 was tested and passed UL 2079 without installation of sealant bands from the underside and these are therefore NOT needed). Joins between each stick are executed using a field-applied silicone sealant at the top and bottom of the join and field-applied intumescent sealant on the adjoining foam faces.

Traffic Durable, Watertight, 2-Hour Fire-Rated Expansion Joint

Emshield DFR2 is a watertight, fire-rated, traffic-durable, sound-attenuating primary seal for both retrofit and new structural expansion joints in horizontal-plane applications. It eliminates the need for additional fire blankets, mineral wools, liquid sealants, cover plates, or other fire stopping materials.

For joints from 1/2-inch (12mm) up to 4-inches (100mm) where +50% and -50% (total 100%), of nominal material size, joint movement is expected.

Emshield DFR2 (Deck, Fire-Rated 2-Hours) is part of a comprehensive line of breakthrough, multifunction, structural expansion joint materials manufactured by EMSEAL. Tested and certified by Underwriters Laboratories (UL), to the rigors of UL 2079, additional versions for walls and floors (including DFR3, a 3-hour fire-rated version) are now available — consult EMSEAL.

Fire-retardant-impregnated foam is factory pre-coated on both the upper and lower facing surfaces with a traffic-grade silicone coating. The resulting composite is then factory compressed to less than its nominal size for installation into structural or other openings.

Emshield DFR2 provides a watertight, clean handling, UV stable, nonstaining, low-temperature-flexible, high-temperature-stable, watertight, traffic durable, sound-suppressing, and fire-rated joint seal in a single installation process.

Uses and Applications

For expansion joints in decks and floors where watertightness and/or a fire-rating and/or traffic durability are required. Applications examples are:

- Stadiums
- Parking decks
- Stair tower perimeters
- Deck-to-deck
- Arenas
- Floors
- Elevator tower perimeters
- Deck-to-wall

Can be used alone or under any other expansion joint cover, plate or filler where depth of substrate allows.

Features

Watertight – Emshield DFR2 is installed with the tensionless traffic-grade, fuel-resistant bellows ensuring that watertightness is achieved.

Fire-Rated – The fire-retardant-impregnated foam ensures a 2-hour fire protection in accordance with UL-2079.

Sound Attenuation – Emshield DFR2 minimizes sound transfer which often occurs at the expansion joint gap. Tested results of Emshield foam products in a 1 1/2" gap in a STC 68/OITC 51 assembly are an STC of 64 and an OITC of 52.

Non-Invasive Anchoring – There are no hard metal-to-substrate connections with Emshield DFR2. This includes embedded pins, anchors, screws, bolts or tracks, trays or rails, flanges or coverplates. The system is locked to the joint faces by means of the 1) back-pressure of the foam, 2) the epoxy adhesive, and 3) the injected sealant bands at the joint face.

Movement Capability – +50% and -50% (100% total) of nominal material size.

Versatility – The standard EMSHIELD DFR2 top surface and lower side color is gray (other colors are optional). At the designer's option, a different color of (non-trafficable) silicone coating can be applied to the underside.

Joint-Size Variation – Uniform bellows appearance, and the ability to handle variations in joint size through size-switching, are among other system features.

Factory-Fabricated Terminations and Transitions – as in all EMSEAL expansion joint systems, continuity of seal through changes in plane and direction is an essential performance differentiator. Emshield DFR2 is manufactured in straight-run sticks which can be joined in the field to EMSEAL's patented factory-fabricated "Universal-90" Transitions and Terminations. (see page 4) These are factory-fabricated single-piece 90° units which are coated on both sides with silicone coating allowing them to be installed as an upturn termination or as a downturn termination. Each has a 12-inch long horizontal leg and a 6-inch vertical leg. Terminations end in a 45° sealed and mitered end. Transitions end in an uncoated 90° cut to be adhered to another transition piece as used in treads and risers, parapets, curbs and other short-rise applications.

In addition to guaranteeing watertightness, EMSEAL's "Universal-90 terminations and transitions" allow for much faster and secure installation by eliminating field cutting at angles.

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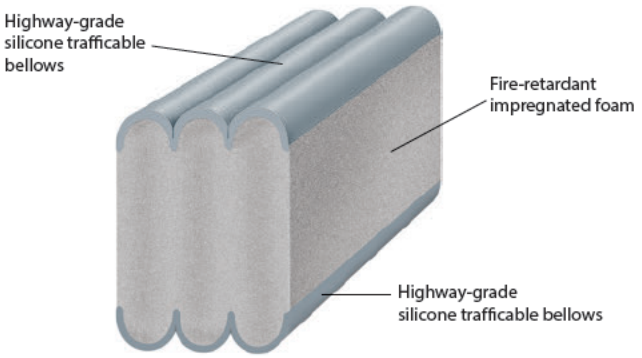
PH: 416.740.2090 **FX:** 416.740.0233

Emshield DFR2



Emshield DFR2 builds on EMSEAL's track record of over 30 years of innovation in sealing structural expansion joints with impregnated foam sealants.

Performance

Capable of movements of +50%, -50% (100% total) of nominal material size.

Standard sizes from 1/2" (12mm) to 4" (100mm).

Depth of Seal for all sizes = 4" (100mm). Note: Typical thickness of concrete for a 2-hour rating = 4" (100mm).

Substrates must be solid, parallel and plumb.

Performance Limitations – For applications in larger joints (3-inches and above) where full extension movement and high point load, small-diameter-wheel conditions (shopping cart, luggage carts, etc.) exist, the designer should consider use of a cover plate over the DFR2 or instead specify the SJS-FR system.

Testing and Standards

Emshield DFR2 has been tested and certified under UL 2079 and as a result meets the requirements of ASTM E1966, ASTM E119 and ASTM E1399.

UL 2079, like ASTM E1966, was developed to encompass the fire testing of ASTM E119 and the movement cycling regime of ASTM E1399.

Laminations – Emshield DFR2 has passed UL 2079 when configured with either vertical, compression-bonded laminations OR with horizontal, adhesive-bonded laminations. The orientation or presence of laminations in any form is inconsequential to the performance of the product under the UL2079 testing criteria.

Design/System/Construction/Assembly

This material has been tested to UL/ULC 2079 and is manufactured under UL's Follow-Up Service. The material is being supplied as a fire-rated component of a wall or floor assembly. It has been tested to UL 2079 in assemblies as depicted in EMSEAL's various listings in the UL Online Certifications Directory. Use of this material in assembly configurations other than depicted in the named UL listings will not encumber or lower the resistance of the deck or wall assembly but is done so at the designers' discretion and responsibility for designing substrates as part of a fire rated assembly that meet applicable standards for the project. Similarly, the published information in the UL Listings cannot always address every construction nuance encountered in the field. Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified products or materials. Authorities Having Jurisdiction should be consulted before construction to ensure that specific adjacent substrates and assemblies are detailed and constructed to meet local fire-rating requirements.

DFR3 System Sizing

Product Code*	Nominal Material Size (Joint Size at Mean T°F)	Depth of Seal
DFR2-0050	1/2" (12mm)	4" (100mm)
DFR2-0065	5/8" (15mm)	4" (100mm)
DFR2-0075	3/4" (20mm)	4" (100mm)
DFR2-0100	1" (25mm)	4" (100mm)
DFR2-0125	1 1/4" (30mm)	4" (100mm)
DFR2-0150	1 1/2" (40mm)	4" (100mm)
DFR2-0175	1 3/4" (45mm)	4" (100mm)
DFR2-0200	2" (50mm)	4" (100mm)
DFR2-0225	2 1/4" (55mm)	4" (100mm)
DFR2-0250	2 1/2" (65mm)	4" (100mm)
DFR2-0275	2 3/4" (70mm)	4" (100mm)
DFR2-0300	3" (75mm)	4" (100mm)
DFR2-0325	3 1/4" (85mm)	4" (100mm)
DFR2-0350	3 1/2" (90mm)	4" (100mm)
DFR2-0375	3 3/4" (95mm)	4" (100mm)
DFR2-0400	4" (100mm)	4" (100mm)

*NOTE: Product Code begins with DFR2 designation.
[e.g. DFR2-0100 = 1-inch (25mm) DFR2]

Colors

Standard traffic surface color is Sikasil® WS-295 Deck Gray (consult EMSEAL for options). Alternate colors for the bottom coatings are available as an option — consult EMSEAL.

CAD & Guide Specs

Guide specifications and CAD details are available online at emseal.com or by contacting EMSEAL.

Warranty

Standard or project-specific warranties are available from EMSEAL on request. Each product can only perform its designed function if it, and the joint-gap into which it is installed, is sized to suit anticipated joint movements in consideration of the movement capability of the product and in consideration of the temperature at time of installation, and if it is installed in strict accordance with EMSEAL's installation instructions.

Availability & Price

Emshield DFR2 is available for shipment internationally. Prices are available from local representatives and/or directly from the manufacturer. The product range is continually being updated, and accordingly EMSEAL reserves the right to modify or withdraw any product without prior notice.

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EMSEAL, LLC 111 Royal Group Crescent, Woodbridge, ON L4H 1X9 Canada **PH:** 416.740.2090 **FX:** 416.740.0233

Emshield DFR

UL 2079 Testing and Certification

(This page shows the original testing of Emshield DFR2.)

Manufacture

UL certification begins with certification of the manufacturing process. UL personnel observe the entire manufacturing process from impregnation to coating to packaging.

Installation

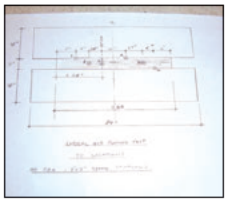
Next, an installation to include a join between standard lengths, using the tools and procedures that will be used in the field is observed by UL. Specifically, 4-inch nominal DFR2 was installed into 4-inch thick concrete slabs (4-inches of concrete are required for the concrete itself to provide 2-hours of fire resistance). Once the epoxy-adhesive and liquid sealants used in the installation were cured, the slabs were ready for cycling.

Emshield DFR2 was tested both with just the intumescent bellows on the bottom side as well as with the intumescent bellows on the bottom side coated with a silicone bellows*.

Joint gap at maximum expansion (+50% of nominal size.)

Joint Cycling

Before any fire testing can commence, the product must pass UL's cycling requirement through the extremes of the offered movement range (+25%, -25% from nominal). Joint movement under UL 2079 occurs at two levels. The first, 400 cycles @ 10 cycles/minute. This test is designed to simulate thermal and wind-sway cycling. The second, an additional 100 cycles @ 30 cycles per minute, is more rapid and is designed to simulate seismic movement. EMSHIELD DFR2 passed cycling at both levels.



Thermocouples are placed in predetermined locations on top of the expansion joint to effectively measure heat transfer.

Fire Resistance

Within 96 hours of the cycling tests the fire testing must occur. The concrete slabs are installed over the test oven.

The joint gap is set at the maximum offered opening for the material size tested (4-inch nominal material at +25% movement claim = 5-inches).

Thermocouples are placed on the top side of the material. For the DFR2, the thermocouples were placed directly on the material--in the middle of the product, at the substrate interface, and directly over the field-join.

The oven is ignited and the temperature rises rapidly to near 1650°F (899°C) over 30 minutes. After two hours the internal temperature of the oven reaches 1850°F (1010°C).

The data from the thermocouples is monitored throughout the 2 hour duration of the test. To pass, no single thermo couple can read in excess of 356°F (180°C) at any point during the duration of the test.

Testing oven below the Emshield DFR2 reaches a maximum temperature of 1850°F (1010°C).

Final Results

After two hours, no single thermocouple on the Emshield DFR2 read in excess of 248°F (120°C).

The successful conclusion of the test earns the Emshield DFR2 the certification by UL of this product in sizes from 4-inches and smaller at depths of 4-inches. Current testing results in a movement capability of +50% and -50% (total 100%) to be fire-rated for up to 2 hours.

Thermocouples register no more than 248°F (120°C)

* UL-certified DFR2 is now manufactured with silicone bellows on the bottom without intumescent bellows. Lower intumescent bellows are incorporated in the design of Emshield DFR3 (DFR 3-hour fire rated)

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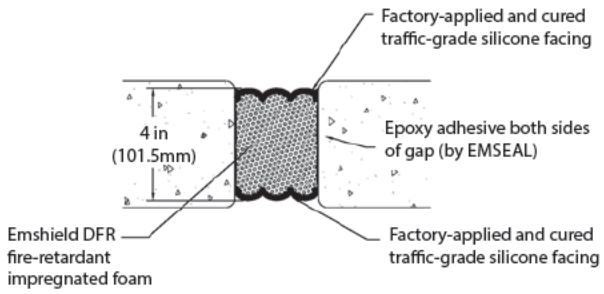
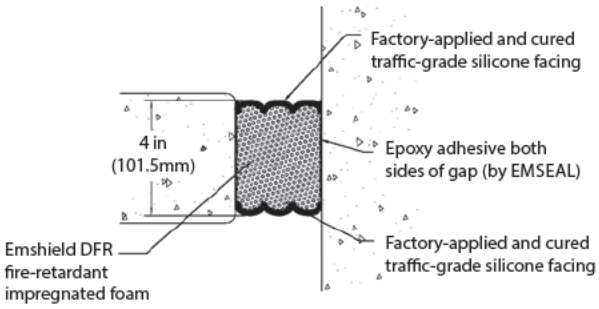
DFR2 In Deck Applications



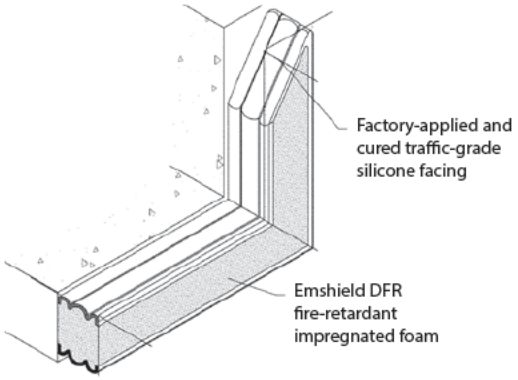
Deck to Deck



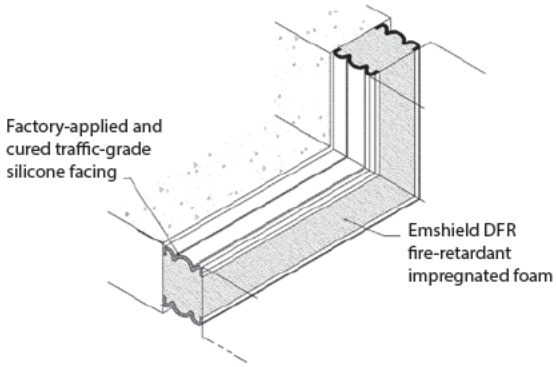
Deck to Wall

DFR2 Universal-90 Terminations and Transitions

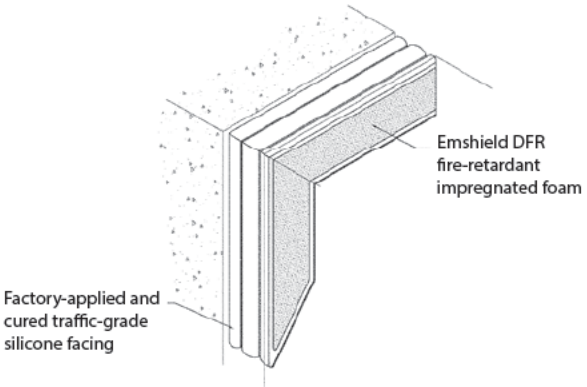
US Patent: 9,200,437 Patent Pending



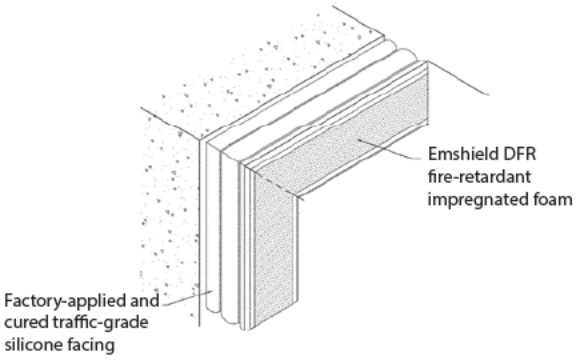
Upturn Termination to Vertical Rise



Horizontal to Vertical Upturn Transition



Downturn Termination to Vertical Overhang



Horizontal to Vertical Downturn Transition

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EMSEAL Safety Data Sheet
Product Package

DFR System

120619a

Safety Data Sheet
DFR Foam

EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough, MA 01581 USA
www.emseal.com

Preparation Date March 15, 2015 **Revision Date** March 13, 2019

1. Identification of the Substance / Preparation

Product identifier	**Emshield DFR**
Other identifier or names	DFR, DFR2, DFR3
UN ID number	None
Manufacturer Address	EMSEAL LLC 111 Royal Group Crescent Woodbridge, Ontario L4H 1X9 Canada
Company Phone	(508) 836-0280 M-F 9am - 5pm
Emergency Phone	CHEMTREC (800) 424-9300 (24 Hours)

2. Hazardous Indentification

Hazardous Classification	This product is not classified as hazardous when used as intended.
Signal Word	None
Pictograms	None
Emergency Overview:	No emergency requirements.

3. Composition / Information on Ingredients

EMSHIELD DFR is composed of polyurethane foam impregnated with a with a proprietary solid inorganic fire retardant bonded to a fully cured silicone sealant. It is classified as Non-Hazardous.

NOTE: Silicone facing is fully cured. The composition of the silicone <u>in its liquid state</u> is comprised of the following:

Chemical Name	*CAS #*	*% by Weight*	*GHS Classification Hazard Statements*
Polydimethyl Siloxane Diol	70131-67-8 3	0.0–60.0	SELF CLASSIFICATION Classification: Not Applicable
Calcium Carbonate (Limestone) Synthetic Calcium Carbonate	1317-65-3 371-34-1	10.0–40.0	SELF CLASSIFICATION Classification: Not Applicable
Phenyl Oximino Silane	34036-80-1	1.0–5.0	Classification: STOT RE Cat. 2, Skin Sensitization Cat. 1, Aquatic, Chronic Toxicity Cat. 3 Hazard Statement Codes: H373, H317, H412
Silicon Dioxide, Fumed	112945-52-5	1.0–5.0	SELF CLASSIFICATION Classification: Not Applicable
Mineral Spirits	8052-41-3	0.0-1.0	Classification: Carcinogenic Cat. 1B, Mutagenic Cat. 1B, Aspiration Hazard Cat. 1 Hazard Statement Codes: H350, H340, H304
Quartz	14808-60-7 14464-46-1	Trace	SELF CLASSIFICATION Classification: Carcinogenic Cat. 1B Hazard Statement Codes: H350
Water and other components. Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).			Classification: Not Applicable

4. First Aid Measures

4.1 EYES:	Flush with water for at least 15 minutes, and call physician if problems persist.
4.2 SKIN:	Product may leave a sticky residue, and mild irritation if prolonged exposure. Scrub with soapy water until adhesive is removed.
4.3 INGESTION:	Do not eat – call physician if ingested.

5. Fire-fighting Measures

5.2 FLAMMABILITY:	Slight. The material composition does not support combustion.
5.2 FLASH POINT:	Unknown.
5.3 AUTO-IGNITION TEMPERATURE:	Unknown.
5.4 EXTINGUISHING MEDIA:	Large volumes of water, or ABC chemical may be appropriate for initial control or small volumes of impregnated foam.
5.5 HAZARDOUS DECOMPOSITION PRODUCTS:	Carbon di/mon oxides will be formed as well as other noxious and toxic fumes upon combustion – do not breath combustion products.

6. Accidental Release Measures

If material is unusable pick up pieces and dispose of in accordance with local regulations; material and all components are non-toxic and normal landfill will most often be acceptable.

7. Handling and Storage

Store in original packaging below 35°C. There are no special handling instructions.

8. Exposure Controls / Personal Protection

8.1 RESPIRATORY PROTECTION:	Not required
8.2 EYE PROTECTION:	Not required
8.3 SKIN PROTECTION:	Gloves of any material are suitable if desired, but not required. No other protection is required.

9. Physical and Chemical Properties

9.1 APPEARANCE:	Dark grey / charcoal colored foam and colored silicone with product identifying packaging.
9.2 ODOR:	Slight characteristic odor.
9.3 PERCENT SOLIDS BY WEIGHT:	100%
9.4 PHYSICAL STATE:	Solid
9.5 PERCENT VOLATILE:	<1% wt/wt
9.6 DENSITY:	0.4g/cm3
9.7 DECOMPOSITION:	> 300°C
9.8 SOLUBILITY IN WATER:	None

10. Stability and Reactivity

Stable under normal conditions – avoid temperatures in excess of 300°C, strong acids and bases, and open flame.

11. Toxicological Information

Unknown.

12. Ecological Information

Unknown

13. Disposal Considerations

No known hazard. Dispose of in accordance with local regulations; material and all components are non-toxic and disposal in normal landfill will most often be acceptable.

14. Transportation Information

Not hazardous – safe for non-hazardous shipping.

15. Regulatory Information

Unknown.

16. Other Information

No other information provided.

Northern Manufacturing Construction Grade Epoxy Part A

Revision Date 12/05/2019 Print Date 12/05/2019

1. Identification

Product name	:	Northern Manufacturing Construction Grade Epoxy Part A
Supplier	:	Northern Manufacturing 111 Royal Group Crescent, Unit NM Woodbridge, ON L4H 1X9 Canada
Telephone	:	416-740-2090 (8AM - 5PM EST) (M-F)
Emergency telephone	:	Chemtrec 1-800-424-9300 (24 Hours)
Recommended use of the chemical and restrictions on use	:	For further information, refer to product data sheet.

2. Hazards identification

GHS Classification

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2A	H319: Causes serious eye irritation.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Carcinogenicity, Category 1A (Inhalation)	H350i: May cause cancer by inhalation.
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Specific target organ systemic toxicity - repeated exposure, Category 1, Lungs	H372: Causes damage to organs through prolonged or repeated exposure.

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H350i May cause cancer by inhalation.
H372 Causes damage to organs (Lungs) through prolonged or

repeated exposure.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

See Section 11 for more detailed information on health effects and symptoms.
There are no hazards not otherwise classified that have been identified during the classification process.
There are no ingredients with unknown acute toxicity used in a mixture at a concentration >= 1%.

3. Composition/information on ingredients

Hazardous ingredients

Chemical name	CAS-No.	Concentration (%)
Quartz (SiO2)	14808-60-7	>= 25 - < 50 %
bisphenol-A-(epichlorhydrin) epoxy resin	25068-38-6	>= 10 - < 20 %
oxirane, mono[(C12-14-alkyloxy)methyl]derivatives	68609-97-2	>= 5 - < 10 %

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

If inhaled	:	Move to fresh air. Consult a physician after significant exposure.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If symptoms persist, call a physician.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting without medical advice. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Obtain medical attention.
Most important symptoms and effects, both acute and delayed	:	irritant effects sensitizing effects carcinogenic effects Cough Respiratory disorder Allergic reactions Excessive lachrymation Erythema Dermatitis See Section 11 for more detailed information on health effects and symptoms. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. May cause cancer by inhalation. Causes damage to organs through prolonged or repeated exposure.
Protection of first-aiders	:	Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance.
Notes to physician	:	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Deny access to unprotected persons.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7. Handling and storage

Advice on safe handling	:	Avoid exceeding the given occupational exposure limits (see section 8). Do not get in eyes, on skin, or on clothing. For personal protection see section 8. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Smoking, eating and drinking should be prohibited in the application area. Follow standard hygiene measures when handling chemical products.
Conditions for safe storage	:	Prevent unauthorized access. Store in original container. Keep in a well-ventilated place. Observe label precautions. Store in accordance with local regulations.
Materials to avoid	:	No data available

8. Exposure controls/personal protection

Component	CAS-No.	Basis **	Value	Exposure limit(s)* / Form of exposure
Quartz (SiO2)	14808-60-7	OSHA Z-3	TWA	10 mg/m3 / %SiO2+2 respirable
		OSHA Z-3	TWA	250 mppcf / %SiO2+5 respirable
		OSHA P0	TWA	0.1 mg/m3 Respirable fraction
		ACGIH	TWA	0.025 mg/m3 Respirable fraction
		OSHA Z-1	TWA	0.05 mg/m3 Respirable dust

*The above mentioned values are in accordance with the legislation in effect at the date of the release of this safety data sheet.

**Basis
ACGIH. Threshold Limit Values (TLV)
OSHA P0. Table Z-1, Limit for Air Contaminat (1989 Vacated Values)
OSHA P1. Permissible Exposure Limits (PEL), Table Z-1, Limit for Air Contaminant
OSHA P2. Permissible Exposure Limits (PEL), Table Z-2
OSHA Z3. Table Z-3, Mineral Dust

Engineering measures : Use of adequate ventilation should be sufficient to control worker exposure to airborne contaminants. If the use of this product generates dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protective equipment

Respiratory protection : Use a properly fitted NIOSH approved air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.

Hand protection Remarks	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eye protection	:	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Hygiene measures	:	Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Remove contaminated clothing and protective equipment before entering eating areas. Wash thoroughly after handling.

9. Physical and chemical properties

Appearance	:	paste
Color	:	white
Odor	:	aromatic
Odor Threshold	:	No data available
Flash point	:	> 212 °F (> 100 °C)
Ignition temperature	:	No data available
Decomposition temperature	:	No data available
Lower explosion limit (Vol%)	:	No data available
Upper explosion limit (Vol%)	:	No data available
Flammability (solid, gas)	:	No data available
Oxidizing properties	:	No data available
pH	:	Note: Not applicable
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	0.01 mmHg (0.01 hpa)
Density	:	1.99 g/cm3

Water solubility	:	Note: insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 20.5 mm2/s
Relative vapor density	:	No data available
Evaporation rate	:	No data available
Burning rate	:	No data available
Volatile organic compounds (VOC) content	:	5 g/l A+B Combined

10. Stability and reactivity

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	The product is chemically stable.
Possibility of hazardous reactions	:	Stable under recommended storage conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	No data available

11. Toxicological information

Acute toxicity

Not classified based on available information.

Components:

bisphenol-A-(epichlorhydrin) epoxy resin:

Acute oral toxicity	:	LD50 Oral (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 Dermal (Rabbit): > 20,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitization

Skin sensitization: May cause an allergic skin reaction.
Respiratory sensitization: Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT-single exposure

May cause respiratory irritation.

STOT-repeated exposure

Causes damage to organs (Lungs) through prolonged or repeated exposure.
Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Aspiration toxicity

Not classified based on available information.

Carcinogenicity

May cause cancer by inhalation.

IARC	Group 1: Carcinogenic to humans	
	Quartz (SiO2)	14808-60-7
	Group 2B: Possibly carcinogenic to humans	
	titanium dioxide	13463-67-7
NTP	Known to be human carcinogen	
	Quartz (SiO2)	14808-60-7

Titanium dioxide (13463-67-7)

In lifetime inhalation studies of rats, airborne respirable-size titanium dioxide particles have seen shown to cause an increase in lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. The potential for these adverse health effects appears to be closely related to the particle size and the amount of the exposed surface area that comes into contact with the lung. However, tests with other laboratory aninals such as mice and hamsters, indicate that rats are significantly more susceptible to the pulmonary overload and inflammation that cause lung cancer. Epidemiology studies do no suggest an increased risk of cancer in humans from occupational exposure to titanium dioxide. Titanium dioxide has been characterized by IARC as possibly carcinogenic to humans (Group 2B) through inhalation (not ingestion). It has not been characterized as a potential carcinogen by either NTP or OSHA.

12. Ecological information

Other information	Do not empty into drains; dispose of this material and its container in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Component:

bisphenol-A-(epichlorhydrin) epoxy	25068-38-6	Toxicity to fish: LC50

resin	Species: Oncorhynchus mykiss (rainbow trout) Dose: 2 mg/l Exposure time: 96 h Toxicity to daphnia and other aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: 1.8 mg/l Exposure time: 48 h

13. Disposal considerations

Disposal methods

Waste from residues	:	Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT
Not dangerous goods
IATA
Not dangerous goods
IMDG
Not dangerous goods

Special precautions for user
No data available

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. Regulatory information

TSCA list	:	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA304 Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Chronic Health Hazard
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitization
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Prop 65 ⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov

16. Other information

HMIS Classification

Health	*	3
Flammability		1
Physical Hazard		0
Personal Protection		X

Caution: HMIS® rating is based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® rating is not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® rating is to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). Please note HMIS® attempts to convey full health warning information to all employees.

Notes to Reader

Revision Date 12/05/2019

Material number: 577437

Northern Manufacturing Construction Grade Epoxy Part B

Revision Date 12/05/2019 Print Date 12/05/2019

1. Identification

Product name	:	Northern Manufacturing Construction Grade Epoxy Part B
Supplier	:	Northern Manufacturing 111 Royal Group Crescent, Unit NM Woodbridge, ON L4H 1X9 Canada
Telephone	:	416-740-2090 (8AM - 5PM EST) (M-F)
Emergency telephone	:	Chemtrec 1-800-424-9300 (24 Hours)
Recommended use of the chemical and restrictions on use	:	For further information, refer to product data sheet.

2. Hazards identification

GHS Classification

Skin corrosion, Category 1B	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Carcinogenicity, Category 1A (Inhalation)	H350i: May cause cancer by inhalation.
Specific target organ systemic toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Specific target organ systemic toxicity - repeated exposure, Category 1, Lungs	H372: Causes damage to organs through prolonged or repeated exposure.

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H350i May cause cancer by inhalation.
H372 Causes damage to organs (Lungs) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P310 Immediately call a POISON CENTER/doctor.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Warning : Reports have associated repeated and prolonged exposure to some of the chemicals in this product with permanent brain,liver, kidney and nervous system damage. Intentional misuse by deliberate concentration and inhalation of vapors may be harmful or fatal.

See Section 11 for more detailed information on health effects and symptoms.
There are no hazards not otherwise classified that have been identified during the classification process.
There are no ingredients with unknown acute toxicity used in a mixture at a concentration >= 1%.

3. Composition/information on ingredients

Hazardous ingredients

Chemical name	CAS-No.	Concentration (%)
Quartz (SiO2)	14808-60-7	>= 25 - < 50 %
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8	>= 3 - < 5 %
m-phenylenebis(methylamine)	1477-55-0	>= 1 - < 2 %
Benzyl alcohol	100-51-6	>= 1 - < 2 %
salicylic acid	69-72-7	>= 1 - < 2 %
triethylenetetramine	112-24-3	>= 0.1 - < 1 %

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

If inhaled : Move to fresh air.
Consult a physician after significant exposure.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Do not induce vomiting without medical advice.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.

Most important symptoms and effects, both acute and delayed : Health injuries may be delayed.
corrosive effects
irritant effects
sensitizing effects
carcinogenic effects

Cough
Respiratory disorder
Allergic reactions
Dermatitis
See Section 11 for more detailed information on health effects and symptoms.

May cause an allergic skin reaction.
Causes serious eye damage.

May cause respiratory irritation.
May cause cancer by inhalation.
Causes damage to organs through prolonged or repeated exposure.
Causes severe burns.

Protection of first-aiders	:	Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance.
Notes to physician	:	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Deny access to unprotected persons.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7. Handling and storage

Advice on safe handling	:	Avoid exceeding the given occupational exposure limits (see section 8). Do not get in eyes, on skin, or on clothing. For personal protection see section 8. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Smoking, eating and drinking should be prohibited in the application area.
Follow standard hygiene measures when handling chemical products.

Conditions for safe storage : Prevent unauthorized access.
Store in original container.
Keep in a well-ventilated place.
Observe label precautions.
Store in accordance with local regulations.

Materials to avoid : No data available

8. Exposure controls/personal protection

Component	CAS-No.	Basis **	Value	Exposure limit(s)* / Form of exposure
Quartz (SiO2)	14808-60-7	OSHA Z-3	TWA	10 mg/m3 / %SiO2+2 respirable
		OSHA Z-3	TWA	250 mppcf / %SiO2+5 respirable
		OSHA P0	TWA	0.1 mg/m3 Respirable fraction
		ACGIH	TWA	0.025 mg/m3 Respirable fraction
		OSHA Z-1	TWA	0.05 mg/m3 Respirable dust
m-phenylenebis(methylamine)	1477-55-0	ACGIH	C	0.1 mg/m3
		OSHA P0	C	0.1 mg/m3

*The above mentioned values are in accordance with the legislation in effect at the date of the release of this safety data sheet.

****Basis**
ACGIH. Threshold Limit Values (TLV)
OSHA P0. Table Z-1, Limit for Air Contaminat (1989 Vacated Values)
OSHA P1. Permissible Exposure Limits (PEL), Table Z-1, Limit for Air Contaminant
OSHA P2. Permissible Exposure Limits (PEL), Table Z-2
OSHA Z3. Table Z-3, Mineral Dust

Engineering measures : Use of adequate ventilation should be sufficient to control worker exposure to airborne contaminants. If the use of this product generates dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal protective equipment

Respiratory protection : Use a properly fitted NIOSH approved air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.

Hand protection
Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Wash hands before breaks and immediately after handling the product.
Remove contaminated clothing and protective equipment before entering eating areas.
Wash thoroughly after handling.

9. Physical and chemical properties

Appearance	:	paste
Color	:	dark gray
Odor	:	amine-like
Odor Threshold	:	No data available
Flash point	:	> 212 °F (> 100 °C)
Ignition temperature	:	No data available
Decomposition temperature	:	No data available

Lower explosion limit (Vol%)	:	No data available
Upper explosion limit (Vol%)	:	No data available
Flammability (solid, gas)	:	No data available
Oxidizing properties	:	No data available
pH	:	Note: Not applicable
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	0.01 mmHg (0.01 hpa)
Density	:	2.01 g/cm3
Water solubility	:	Note: slightly soluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 20.5 mm2/s
Relative vapor density	:	No data available
Evaporation rate	:	No data available
Burning rate	:	No data available
Volatile organic compounds (VOC) content	:	5 g/l A+B Combined

10. Stability and reactivity

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	The product is chemically stable.
Possibility of hazardous reactions	:	Stable under recommended storage conditions.
Conditions to avoid	:	No data available
Incompatible materials	:	No data available

11. Toxicological information

Acute toxicity

Not classified based on available information.

Components:

m-phenylenebis(methylamine):

Acute oral toxicity	:	LD50 Oral (Rat): 930 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 1.34 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 Dermal (Rat): > 3,100 mg/kg

Benzyl alcohol:

Acute oral toxicity	:	LD50 Oral (Rat): 1,620 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 4.178 mg/l Exposure time: 4 h Test atmosphere: dust/mist

salicylic acid:

Acute oral toxicity	:	LD50 Oral (Rat): 891 mg/kg
Acute dermal toxicity	:	LD50 Dermal (Rat): > 2,000 mg/kg

triethylenetetramine:

Acute oral toxicity	:	LD50 Oral (Rat): 1,716 mg/kg
Acute dermal toxicity	:	LD50 Dermal (Rabbit): 1,465 mg/kg

Skin corrosion/irritation

Causes severe burns.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Skin sensitization: May cause an allergic skin reaction.
Respiratory sensitization: Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT-single exposure

May cause respiratory irritation.

STOT-repeated exposure

Causes damage to organs (Lungs) through prolonged or repeated exposure.
Reports have associated repeated and prolonged exposure to some of the chemicals in this product with permanent brain,liver, kidney and nervous system damage. Intentional misuse by deliberate concentration and inhalation of vapors may be harmful or fatal.
Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Aspiration toxicity

Not classified based on available information.

Carcinogenicity

May cause cancer by inhalation.

IARC	Group 1: Carcinogenic to humans	
	Quartz (SiO2)	14808-60-7
NTP	Known to be human carcinogen	
	Quartz (SiO2)	14808-60-7

12. Ecological information

Other information

Do not empty into drains; dispose of this material and its container in a safe way.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Component:

m-phenylenebis(methylamine)	1477-55-0	Toxicity to fish: LC50 Species: Oryzias latipes (Japanese medaka) Dose: > 10 - 100 mg/l Exposure time: 96 h Toxicity to daphnia and other aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: > 10 - 100 mg/l Exposure time: 48 h
Benzyl alcohol	100-51-6	Toxicity to fish: LC50 Species: Fish Dose: > 100 mg/l Exposure time: 96 h Toxicity to daphnia and other aquatic invertebrates: EC50 Species: Daphnia magna (Water flea) Dose: > 100 mg/l Exposure time: 48 h
triethylenetetramine	112-24-3	Toxicity to fish: LC50 Species: Pimephales promelas (fathead minnow) Dose: > 100 mg/l Exposure time: 96 h Toxicity to daphnia and other aquatic invertebrates: EC50 Species: Daphnia Dose: 10 - 100 mg/l Exposure time: 48 h Toxicity to algae: EC50

Species: Pseudokirchneriella subcapitata (green algae)
Dose: 10 - 100 mg/l
Exposure time: 72 h

13. Disposal considerations

Disposal methods

Waste from residues	:	Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	1760
Description of the goods	Corrosive liquids, n.o.s. (N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine, m-phenylenebis(methylamine))
Class	8
Packing group	III
Labels	8
Emergency Response Guidebook Number	154

IATA

UN number	1760
Description of the goods	Corrosive liquid, n.o.s. (N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine, m-phenylenebis(methylamine))
Class	8
Packing group	III
Labels	8
Packing instruction (cargo aircraft)	856
Packing instruction (passenger aircraft)	852
Packing instruction (passenger aircraft)	Y841

IMDG

UN number	1760
Description of the goods	CORROSIVE LIQUID, N.O.S. (N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine, m-phenylenebis(methylamine))

Class	8
Packing group	III
Labels	8
EmS Number 1	F-A
EmS Number 2	S-B
Marine pollutant	no

DOT: For Limited Quantity exceptions reference 49 CFR 173.154 (b)
IMDG: For Limited Quantity special provisions reference IMDG Code Chapter 3.4

Special precautions for user
No data available

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. Regulatory information

TSCA list : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA304 Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Chronic Health Hazard
Skin corrosion or irritation
Serious eye damage or eye irritation
Respiratory or skin sensitization
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Prop 65 ⚠ **WARNING:** Cancer – www.P65Warnings.ca.gov

16. Other information

HMIS Classification

Health	*	3
Flammability		1
Physical Hazard		0
Personal Protection		X

Caution: HMIS® rating is based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® rating is not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® rating is to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). Please note HMIS® attempts to convey full health warning information to all employees.

Revision Date 12/05/2019

Material number: 579211

1. Identification

Product name	:	Sikasil® WS-295
Supplier	:	Sika Corporation 201 Polito Avenue Lyndhurst, NJ 07071 USA www.sikausa.com
Telephone	:	(201) 933-8800
Telefax	:	(201) 804-1076
E-mail address	:	ehs@sika-corp.com
Emergency telephone	:	CHEMTREC: 800-424-9300 INTERNATIONAL: 703-527-3887
Recommended use of the chemical and restrictions on use	:	For further information, refer to product data sheet.

2. Hazards identification

GHS Classification

Flammable liquids, Category 4	H227: Combustible liquid.
Eye irritation, Category 2A	H319: Causes serious eye irritation.
Skin sensitization, Category 1	H317: May cause an allergic skin reaction.
Reproductive toxicity, Category 2	H361f: Suspected of damaging fertility.
Specific target organ systemic toxicity - repeated exposure, Category 2 (Oral)	H373: May cause damage to organs through prolonged or repeated exposure if swallowed.

GHS label elements

Hazard pictograms :

Signal Word : Warning

Hazard Statements : H227 Combustible liquid.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H361f Suspected of damaging fertility.
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read

and understood.
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.
P281 Use personal protective equipment as required.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment for extinction.
Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

See Section 11 for more detailed information on health effects and symptoms.
There are no hazards not otherwise classified that have been identified during the classification process.
There are no ingredients with unknown acute toxicity used in a mixture at a concentration >= 1%.

3. Composition/information on ingredients

Hazardous ingredients

Chemical name	CAS-No.	Concentration (%)
2-butanone-O,O',O"-(phenylsilylidyne)trioxime	34036-80-1	>= 2 - < 5 %
butan-2-one-O,O',O"-(methylsilylidyne)trioxime	22984-54-9	>= 1 - < 2 %
N-(2-aminoethyl)-N'-[3-(trimethoxysilyl)propyl]ethylenediamine	35141-30-1	>= 1 - < 2 %
octamethylcyclotetrasiloxane	556-67-2	< 1 %

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

If inhaled	:	Move to fresh air. Consult a physician after significant exposure.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. If symptoms persist, call a physician.
In case of eye contact	:	Immediately flush eye(s) with plenty of water. Remove contact lenses. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting without medical advice. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Obtain medical attention.
Most important symptoms and effects, both acute and delayed	:	irritant effects sensitizing effects Allergic reactions Excessive lachrymation See Section 11 for more detailed information on health effects and symptoms. May cause an allergic skin reaction. Causes serious eye irritation. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure if swallowed.
Protection of first-aiders	:	Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance.
Notes to physician	:	Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media	:	Carbon dioxide (CO2)
Unsuitable extinguishing media	:	Water
Specific extinguishing methods	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Deny access to unprotected persons.
Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

7. Handling and storage

Advice on safe handling	:	Do not breathe vapors or spray mist. Avoid exceeding the given occupational exposure limits (see section 8). Do not get in eyes, on skin, or on clothing. For personal protection see section 8. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Smoking, eating and drinking should be prohibited in the application area. Follow standard hygiene measures when handling chemical products.
Conditions for safe storage	:	Store in original container. Keep in a well-ventilated place. Observe label precautions. Store in accordance with local regulations.
Materials to avoid	:	No data available

8. Exposure controls/personal protection

Component	CAS-No.	Basis **	Value	Exposure limit(s)* / Form of exposure
calcium carbonate	471-34-1	CAL PEL	PEL	10 mg/m3 Total dust
		CAL PEL	PEL	5 mg/m3 respirable dust fraction

*The above mentioned values are in accordance with the legislation in effect at the date of the release of this safety data sheet.

****Basis**
ACGIH. Threshold Limit Values (TLV)
OSHA P0. Table Z-1, Limit for Air Contaminat (1989 Vacated Values)
OSHA P1. Permissible Exposure Limits (PEL), Table Z-1, Limit for Air Contaminant
OSHA P2. Permissible Exposure Limits (PEL), Table Z-2
OSHA Z3. Table Z-3, Mineral Dust

Engineering measures : Use of adequate ventilation should be sufficient to control worker exposure to airborne contaminants. If the use of this product generates dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.
The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits.

Personal protective equipment

Respiratory protection : Use a properly fitted NIOSH approved air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.

Hand protection
Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Wash hands before breaks and immediately after handling the product.
Remove respiratory and skin/eye protection only after vapors have been cleared from the area.
Remove contaminated clothing and protective equipment before entering eating areas.
Wash thoroughly after handling.

9. Physical and chemical properties

Appearance	:	paste
Color	:	various
Odor	:	mild musty
Odor Threshold	:	No data available
Flash point	:	185 °F (85 °C)
Ignition temperature	:	No data available
Decomposition temperature	:	No data available
Lower explosion limit (Vol%)	:	No data available
Upper explosion limit (Vol%)	:	No data available
Flammability (solid, gas)	:	No data available
Oxidizing properties	:	No data available
pH	:	Note: Not applicable
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	No data available
Vapor pressure	:	0.01 mmHg (0.01 hpa)
Density	:	ca.1.12 g/cm3 at 73 °F (23 °C)
Water solubility	:	Note: insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	> 20.5 mm2/s at 104 °F (40 °C)
Relative vapor density	:	No data available
Evaporation rate	:	No data available
Burning rate	:	No data available
Volatile organic compounds (VOC) content	:	37 g/l

10. Stability and reactivity

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	The product is chemically stable.
Possibility of hazardous reactions	:	Stable under recommended storage conditions.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	No data available

11. Toxicological information

Acute toxicity

Not classified based on available information.

Ingredients:

N-(2-aminoethyl)-N'-[3-(trimethoxysilyl)propyl]ethylenediamine:

Acute oral toxicity	:	LD50 Oral (Rat): 7,758 mg/kg
Acute dermal toxicity	:	LD50 Dermal (Rat): 16,640 mg/kg

octamethylcyclotetrasiloxane:

Acute inhalation toxicity	:	LC50 (Rat): 36 mg/l Exposure time: 4 h Test atmosphere: vapor

Skin corrosion/irritation

Not classified based on available information.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitization

Skin sensitization: May cause an allergic skin reaction.
Respiratory sensitization: Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Reproductive toxicity

Suspected of damaging fertility.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure if swallowed.
Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Aspiration toxicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

IARC	Group 2B: Possibly carcinogenic to humans	
	titanium dioxide	13463-67-7
	Carbon black	1333-86-4
NTP	Not applicable	

Carbon black (1333-86-4)

Animal Toxicity:
Rat, oral, duration 2 year
Effect: no tumors

Mouse, oral, duration 2 years
Effect: no tumors

Mouse, dermal, duration 18 months
Effect: no skin tumors

Rat, inhalation, duration 2 years
Target organ: lungs
Effect: inflammation, fibrosis, tumors

Note: Tumors in the rat lung are considered to be related to the "particle overload phenomenon" rather than to a specific chemical effect of carbon black itself in the lung. These effects in rats have been reported in many studies on other poorly soluble inorganic particles and appear to be rat specific. Tumors have not been observed in other species (i.e., mouse and hamster) for carbon black or other poorly soluble particles under similar circumstances and study conditions.

Mortality studies (human data): A study on carbon black production workers in the UK (Sorahan, 2001) found an increased risk of lung cancer in two of the five plant studied; however, the increase was not related to the dose of carbon black. Thus, the authors did not consider the increased risk in lung cancer to be due to carbon black exposure. A German study of carbon black workers at one plant (Morfeld, 2006; Buechte, 2006) found a similar increase in lung cancer risk but, like the Sorohan, 2001 (UK study) found no association with carbon black exposure. A large US study of 18 plants showed a reduction in lung cancer risk in carbon black production workers (DEll, 2006). Based upon these studies, the February 2006 Working Group at the International Agency for Research on Cancer (IARC) concluded that the human evidence for carcinogenicity was inadequate (IARC, 2010).

Since the IARC evaluation of carbon black, Sorahan and Harrington (2007) have re-analyzed the UK study data using an alternative exposure hypothesis and found a positive association with carbon black exposure in two of the five plants. The same exposure hypothesis was applied by Morfeld and McCunney (2009) to the German cohort; in contrast, they found no association between carbon black exposure and lung cancer risk and, thus, no support for the alternative exposure hypothesis used by Sorahan and Harrington.

Overall, as a result of these detailed investigations, no causative link between carbon black exposure and cancer risk in humans has been demonstrated.

IARC CANCER CLASSIFICATION: In 2006 IARC re-affirmed its 1995 finding that there is "inadequate evidence" from human health studies to assess whether carbon black causes cancer in humans. IARC concluded that there is "sufficient evidence" in experimental animal studies for the carcinogenicity of carbon black. IARC's overall evaluation is that carbon black is "possibly carcinogenic to humans" (Group 2B)". This conclusion was based on IARC's

guidelines, which generally require such a classification if one species exhibits carcinogenicity in two or more animal studies (IARC, 2010).

Solvent extracts of carbon black were used in one study of rats in which skin tumors were found after dermal application and several studies of mice in which sarcomas were found following subcutaneous injection. IARC concluded that there was "sufficient evidence" that carbon black extracts can cause cancer in animals (Group 2B).

ICGIH CANCER CLASSIFICATION: Confirmed Animal Carcinogen with Unknown Relevance to Humans (Category A3 Carcinogen).

ASSESSMENT: Applying the guidelines of self-classification under the Globally Harmonized System of Classification and Labeling of Chemicals, carbon black is not classified as a carcinogen. Lung tumors are induced in rats as a result of repeated exposure to inert, poorly soluble particles like carbon black and other poorly soluble particles. Rats tumors are a result of a secondary non-genotoxic mechanism that has questionable relevance for classification in humans. In support of this opinion, the CLP Guidance for Specific Target Organ Toxicity - Repeated Exposure (STOT-RE), cites lung overload under mechanisms not relevant to humans. Human health studies show that exposure to carbon black does not increase the risk to carcinogenicity.

Titanium dioxide (13463-67-7)

In lifetime inhalation studies of rats, airborne respirable-size titanium dioxide particles have seen shown to cause an increase in lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. The potential for these adverse health effects appears to be closely related to the particle size and the amount of the exposed surface area that comes into contact with the lung. However, tests with other laboratory aninals such as mice and hamsters, indicate that rats are significantly more susceptible to the pulmonary overload and inflammation that cause lung cancer. Epidemiology studies do no suggest an increased risk of cancer in humans from occupational exposure to titanium dioxide. Titanium dioxide has been characterized by IARC as possibly carcinogenic to humans (Group 2B) through inhalation (not ingestion). It has not been characterized as a potential carcinogen by either NTP or OSHA.

12. Ecological information

Other information	Do not empty into drains; dispose of this material and its container in a safe way. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

13. Disposal considerations

Disposal methods

Waste from residues	:	Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional

local authority requirements.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT
Not dangerous goods
IATA
Not dangerous goods
IMDG
Not dangerous goods

Special precautions for user
No data available

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

15. Regulatory information

TSCA list : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA304 Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Prop 65	WARNING! This product contains a chemical known in the State of California to cause cancer. WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

16. Other information

HMIS Classification

Health	*	2
Flammability		2
Physical Hazard		0
Personal Protection		X

Caution: HMIS® rating is based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® rating is not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® rating is to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). Please note HMIS® attempts to convey full health warning information to all employees.

Notes to Reader

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Revision Date 01/26/2017

Material number: 481215

Safety Data Sheet

Document Group:	09-5451-1	**Version Number:**	26.00
Issue Date:	06/20/14	**Supercedes Date:**	08/18/13

SECTION 1: Identification

1.1. Product identifier
3M Brand Fire Barrier CP-25WB+

Product Identification Numbers
42-0016-4710-8, 42-0016-4715-7, 42-0016-4716-5, 98-0400-5380-7, 98-0400-5381-5, 98-0400-5382-3, 98-0400-5383-1, 98-0400-5406-0, 98-0400-5456-5, 98-0400-5562-0, 98-0400-5573-7, 98-0400-5610-7, 98-0400-5629-7

1.2. Recommended use and restrictions on use

Recommended use
Fire Protection, Used as Firestop in buildings.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Industrial Adhesives and Tapes Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Serious Eye Damage/Irritation: Category 2B.

2.2. Label elements
Signal word
Warning

Symbols
Not applicable

Pictograms
Not applicable

Hazard Statements

Causes eye irritation.

Precautionary Statements
General:
Keep out of reach of children.

Prevention:
Wash thoroughly after handling.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

2.3. Hazards not otherwise classified
None.

25% of the mixture consists of ingredients of unknown acute dermal toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Zinc Borate 2335	138265-88-0	10 - 30 Trade Secret *
Polymer (NJTS Reg. No. 04499600-7270)	Trade Secret*	10 - 30 Trade Secret *
Water	7732-18-5	10 - 30 Trade Secret *
Sodium Silicate	1344-09-8	10 - 30 Trade Secret *
Ethylhexyldiphenyl phosphate	1241-94-7	3 - 7 Trade Secret *
Oxide glass chemicals	65997-17-3	1 - 5 Trade Secret *
Iron oxide	1309-37-1	1 - 5 Trade Secret *
Polyethylene Glycol	25322-68-3	1 - 5 Trade Secret *
Triphenyl phosphate	115-86-6	< 1.0 Trade Secret *
Di-2-ethylhexlphenyl phosphate	16368-97-1	< 1.0 Trade Secret *
Polyoxyethylene monooctylphenyl ether	9036-19-5	< 1.0 Trade Secret *
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	55965-84-9	< 0.001 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
Non-combustible. Use a fire fighting agent suitable for surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid eye contact. Keep out of reach of children. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment.

7.2. Conditions for safe storage including any incompatibilities
Keep cool. Store away from heat. Store away from areas where product may come into contact with food or pharmaceuticals. Store in a dry place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Triphenyl phosphate	115-86-6	ACGIH	TWA:3 mg/m3	
Triphenyl phosphate	115-86-6	OSHA	TWA:3 mg/m3	

Iron oxide	1309-37-1	ACGIH	TWA(respirable fraction):5 mg/m3	
Iron oxide	1309-37-1	OSHA	TWA(as fume):10 mg/m3	
ROUGE	1309-37-1	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3	
Polyethylene Glycol	25322-68-3	AIHA	TWA(as particulate):10 mg/m3	
Oxide glass chemicals	65997-17-3	Manufacturer determined	TWA(as dust):10 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Butyl Rubber
Neoprene
Nitrile Rubber

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Paste
Odor, Color, Grade:	Red with negligible odor

Odor threshold	*No Data Available*
Melting point	*No Data Available*
Flash Point	No flash point
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Specific Gravity	1.35 [*Ref Std:* WATER=1]
Solubility in Water	Complete
Solubility- non-water	*No Data Available*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Volatile Organic Compounds	< 1 g/l
VOC Less H2O & Exempt Solvents	< 1 g/l

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
None known.

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition
Carbon monoxide	Not Specified
Carbon dioxide	Not Specified
Oxides of Phosphorus	Not Specified

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient

classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:
May be harmful if swallowed.
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE 2,000 - 5,000 mg/kg
Polymer (NJTS Reg. No. 04499600-7270)	Ingestion	Rat	LD50 > 2,000 mg/kg
Zinc Borate 2335	Dermal	Rabbit	LD50 > 10,000 mg/kg
Zinc Borate 2335	Ingestion	Rat	LD50 > 10,000 mg/kg
Sodium Silicate	Dermal	Rabbit	LD50 > 4,640 mg/kg
Sodium Silicate	Ingestion	Rat	LD50 500 mg/kg
Ethylhexyldiphenyl phosphate	Dermal	Rabbit	LD50 > 7,940 mg/kg
Ethylhexyldiphenyl phosphate	Ingestion	Rat	LD50 > 24,000 mg/kg
Iron oxide	Dermal	Not available	LD50 3,100 mg/kg
Iron oxide	Ingestion	Not available	LD50 3,700 mg/kg
Polyethylene Glycol	Dermal	Rabbit	LD50 > 20,000 mg/kg
Polyethylene Glycol	Ingestion	Rat	LD50 32,770 mg/kg
Oxide glass chemicals	Dermal		LD50 estimated to be > 5,000 mg/kg
Oxide glass chemicals	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Polyoxyethylene monooctylphenyl ether	Dermal	Rabbit	LD50 > 3,000 mg/kg
Polyoxyethylene monooctylphenyl ether	Ingestion	Rat	LD50 > 500 mg/kg
Triphenyl phosphate	Dermal	Rabbit	LD50 > 7,900 mg/kg
Triphenyl phosphate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 50 mg/l
Triphenyl phosphate	Ingestion	Rat	LD50 > 3,000 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Rabbit	LD50 87 mg/kg
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.33 mg/l

3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	LD50 40 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)	Rabbit	Minimal irritation
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Minimal irritation
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

Serious Eye Damage/Irritation

Name	Species	Value
Polymer (NJTS Reg. No. 04499600-7270)		Mild irritant
Sodium Silicate	Rabbit	Corrosive
Iron oxide	Rabbit	No significant irritation
Polyethylene Glycol	Rabbit	Mild irritant
Oxide glass chemicals		No significant irritation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Sodium Silicate	Mouse	Not sensitizing
Iron oxide	Human	Some positive data exist, but the data are not sufficient for classification
Polyethylene Glycol	Guinea pig	Not sensitizing
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Sensitizing

Photosensitization

Name	Species	Value
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Human and animal	Not sensitizing

Respiratory Sensitization

Name	Species	Value

Germ Cell Mutagenicity

Name	Route	Value
Sodium Silicate	In Vitro	Not mutagenic
Sodium Silicate	In vivo	Not mutagenic
Iron oxide	In Vitro	Not mutagenic
Polyethylene Glycol	In Vitro	Not mutagenic
Polyethylene Glycol	In vivo	Not mutagenic
Oxide glass chemicals	In Vitro	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In vivo	Not mutagenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Iron oxide	Inhalation	Human	Some positive data exist, but the data are not

			sufficient for classification
Polyethylene Glycol	Ingestion	Rat	Not carcinogenic
Oxide glass chemicals	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Dermal	Mouse	Not carcinogenic
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Rat	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 200 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to female reproduction	Rat	NOAEL 1,125 mg/kg/day	during gestation
Polyethylene Glycol	Ingestion	Not toxic to male reproduction	Rat	NOAEL 5699 +/- 1341 mg/kg/day	5 days
Polyethylene Glycol	Not Specified	Some positive reproductive/developmental data exist, but the data are not sufficient for classification		NOEL N/A	
Polyethylene Glycol	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 562 mg/animal/day	during gestation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to female reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to male reproduction	Rat	NOAEL 10 mg/kg/day	2 generation
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Ingestion	Not toxic to development	Rat	NOAEL 15 mg/kg/day	during organogenesis

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Inhalation	respiratory irritation	May cause respiratory irritation	official classification	NOAEL Not available	
Polyethylene Glycol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
3(2H)-Isothiazolone, 5-chloro-2-methyl-, mixt. with 2-methyl-3(2H)-isothiazolone	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Sodium Silicate	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Dog	LOAEL 2,400 mg/kg/day	4 weeks
Sodium Silicate	Ingestion	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 804 mg/kg/day	3 months
Sodium Silicate	Ingestion	blood	All data are negative	Rat	NOAEL 804	3 months

					mg/kg/day	
Sodium Silicate	Ingestion	heart | liver	All data are negative	Rat	NOAEL 1,259 mg/kg/day	8 weeks
Iron oxide	Inhalation	pulmonary fibrosis | pneumoconiosis	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Polyethylene Glycol	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1.008 mg/l	2 weeks
Polyethylene Glycol	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Polyethylene Glycol	Ingestion	heart | endocrine system | hematopoietic system | liver | nervous system	All data are negative	Rat	NOAEL 5,640 mg/kg/day	13 weeks
Oxide glass chemicals	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL not available	occupational exposure

Aspiration Hazard

Name	Value

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Test Organism	Test Type	Result
Water flea, Daphnia magna	48 hours Aquatic Toxicity - Acute	27 mg/l
Green algae, Pseudokirchneriella subcapitata	72 hours Aquatic Toxicity - Chronic	2.6 mg/l

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit **http://3M.com/Transportinfo** or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
Zinc Borate 2335 (ZINC COMPOUNDS)	138265-88-0	10 - 30

15.2. State Regulations

15.3. Chemical Inventories

The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

15.4. International Regulations

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 1 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification

Health: 2 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® III) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® III ratings are to be used with a fully implemented HMIS® III program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group:	09-5451-1	**Version Number:**	26.00
Issue Date:	06/20/14	**Supercedes Date:**	08/18/13

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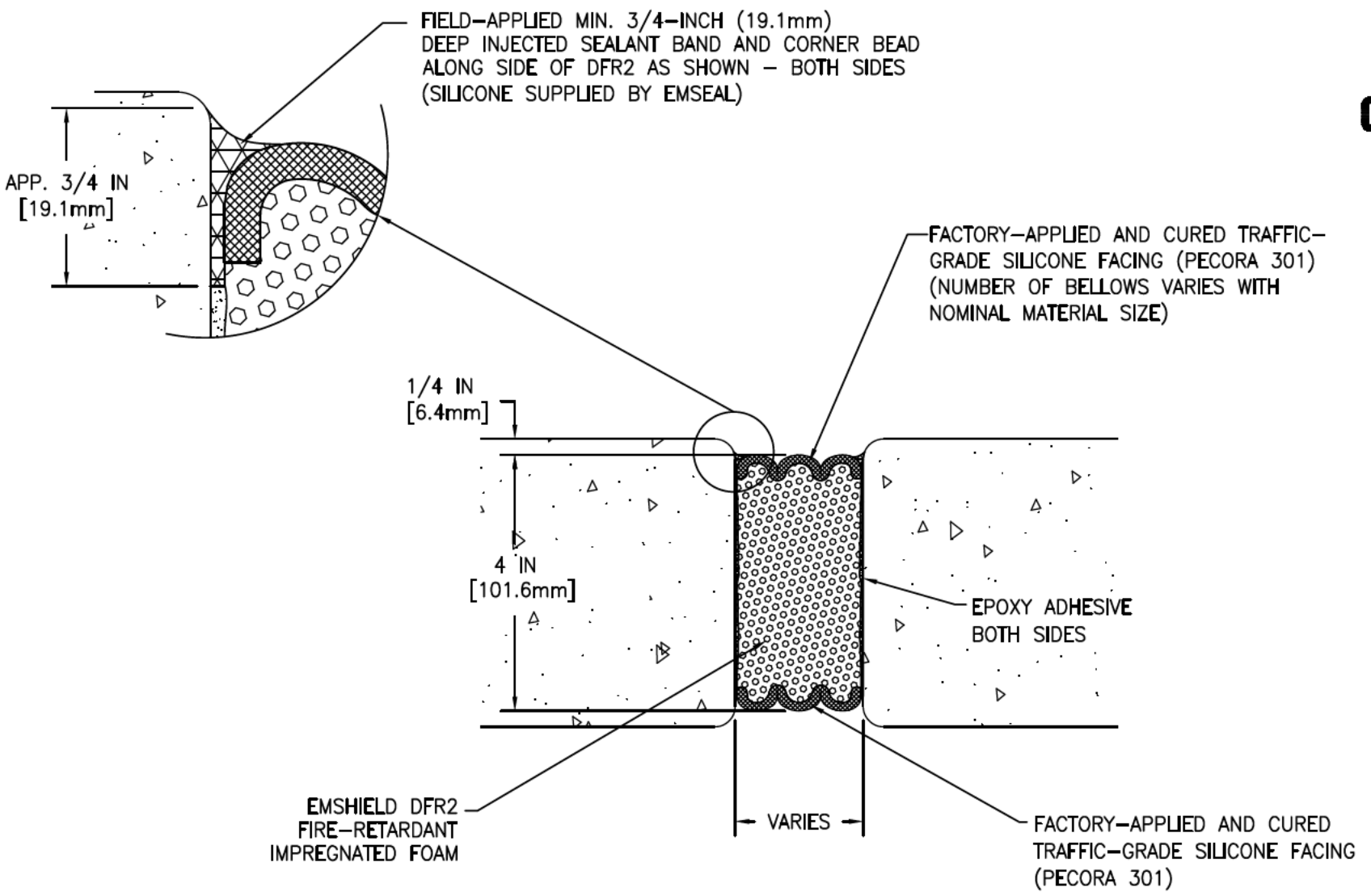
3M USA SDSs are available at www.3M.com



System # FF-D-( )
System # ( )
UL CERTIFICATION
VARIES WITH NOMINAL
MATERIAL SIZE

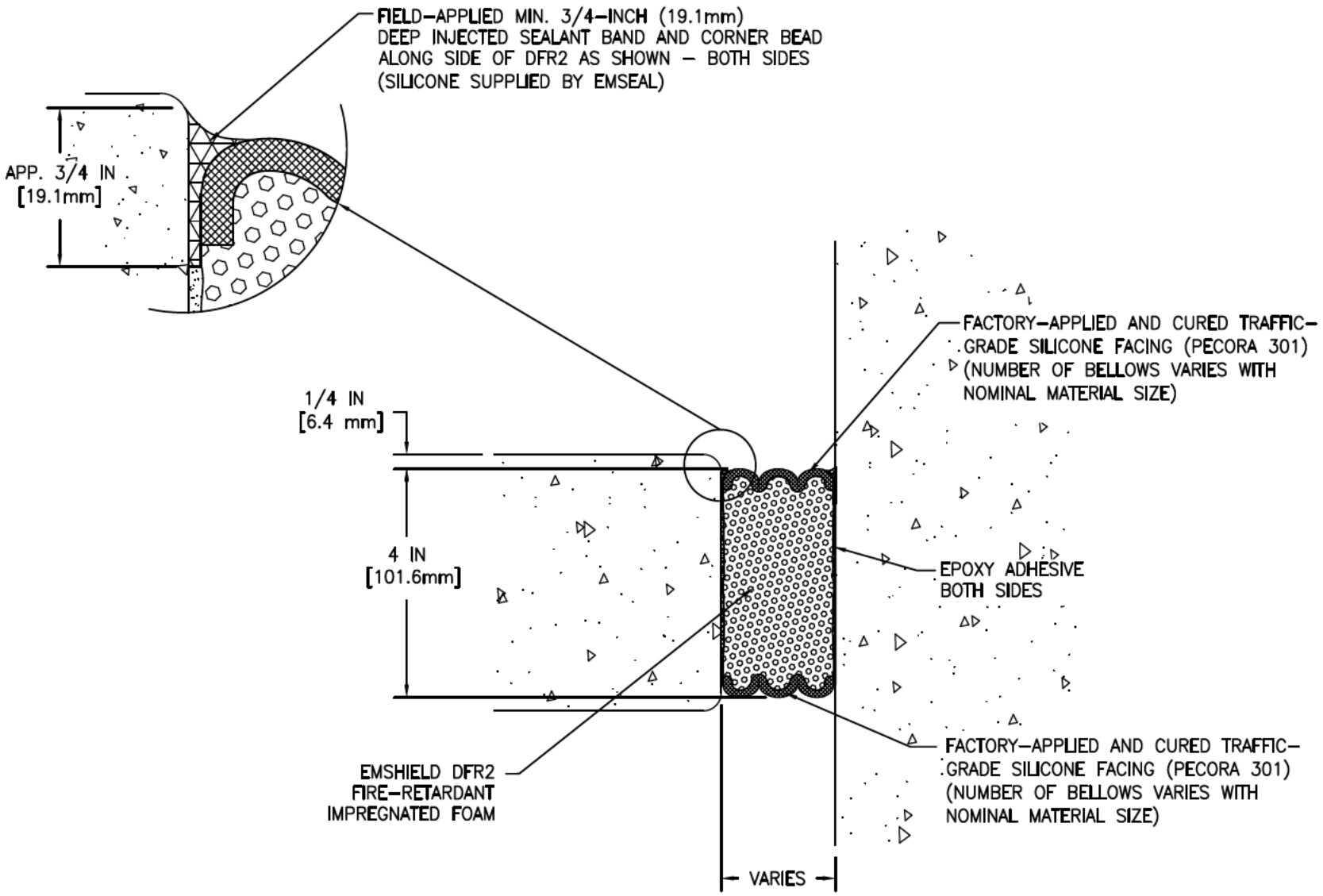
MOVEMENT: ±50% (TOTAL 100%) OF NOMINAL MATERIAL SIZE

EMSEAL JOINT SYSTEMS LTD.

EMSHIELD DFR2 – DECK TO DECK – TYPICAL

DRAWN BY:	DATE:	SCALE:	SHEET
SPA	2016/06/27	N.T.S.	No: 1 OF 1

PART NUMBER: DFR2_DD_CONC_TYPICAL



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System # FW-D-( )
System # ( )
UL CERTIFICATION
VARIES WITH NOMINAL
MATERIAL SIZE

MOVEMENT: ±50% (TOTAL 100%) OF NOMINAL MATERIAL SIZE

EMSEAL JOINT SYSTEMS LTD.

EMSHIELD DFR2 – DECK TO WALL – TYPICAL

DRAWN BY:	DATE:	SCALE:	SHEET
SPA	2016/06/27	N.T.S.	No: 1 OF 1

PART NUMBER: DFR2_DW_CONC_TYPICAL

PRODUCT DATA **Emcrete**

Non-Hazardous High-Impact Elastomeric Concrete Material

A SIKA COMPANY

Emcrete expansion joint patching and nosing material

Product Description

Emcrete is a flexible, durable, high-impact elastomeric concrete material. It is a bio-based, non-hazardous, extremely-low VOC product primarily used as a component of an expansion joint assembly either to fill blockouts on each side of an expansion joint gap, to repair a damaged expansion joint gap edge, as an impact-absorbing backfill nosing, or as a fastcuring patching material for potholes, or spalls on concrete roadways, parking surfaces, bridges, runways, etc.

Emcrete is comprised of a two-component polyurethane resin mixed with silica-free sand and chopped fiberglass aggregates. The sand imparts compressive strength. The fiber provides cross-linked reinforcement while, in combination with the sand, adds body to the polyurethane resin.

Typical Uses

Some of the typical uses of Emcrete within EMSEAL expansion joint systems are:

Repair – To repair spalled gap edges in high load-bearing applications. The spalled concrete must be cut out using industry standards for concrete repair. Once the gap edge has been cut and cleaned, the self-leveling Emcrete can be poured to form ahorizontal elastomeric gap edge that is more resistant to spalling and gap edge deterioration.

Elastomeric Concrete – To act as an elastomeric concrete where the possibility of spalling or cracking is a concern for standard concrete or where existing spalls or potholes in concrete roadways, runways, bridges etc. is required.

Leveling and Dampening – As a leveling bed and sound dampening support of the coverplates of EMSEAL SJS Seismic Joint Systems systems. The SJS family of products from EMSEAL are coverplate systems secured to a precompressed foam and spline assembly. The coverplates ride on the deck surface. It is typical to form, cut or grind a shallow blockout on each side of the joint gap and fill this with Emcrete. This provides a surface that can be grinded to ensure that the coverplates do not rock and are fully supported over their entire contact area. Ensuring the plates are properly supported while absorbing the shocks of vehicular impact both contribute in attenuating sound.

Impact Absorbing – As an impact-absorbing header material behind the rails of EMSEAL FP systems. Migutan, DSM-FP, and SJS-FP are systems are all designed for installation in split-slab conditions. These systems install onto the structural slab and feature watertight integration with the split-slab waterproofing membrane through integral side flashing sheets supplied with the expansion joint system.

Installation Summary

The following is a summary. Installation must follow the complete Installation Instructions shipped with the material and available at *www.emseal.com*.

Substrates must be thoroughly dry and the temperature must be at least 45°F (8°C) and rising to install Emcrete. The bonding surface should be in sound and good condition before prepping. The entire bonding surface is to be wire brushed and fully cleaned leaving no contaminants such as dirt, dust, oils, or other residue on any surface. Next, the area where Emcrete will be poured should be fully prepped and formed. The substrate is then primed with the (non-HAP) Emprime primer that is included with units of Emcrete and allowed to dry for 30 minutes. The Emcrete is then mixed in accordance with the complete Installation Instructions in the pre-measured amounts provided. The Emcrete is then poured into the forms where it will self-level and cure exothermically. It can be trowelled to ensure a consistent surface. The working time of Emcrete is less than 10-minutes after mixing. Working time, and cure time, is longer in cool weather and shorter in hot weather. Emcrete reaches a hardness which allows for pedestrian or vehicular traffic within 1-hour after application under standard conditions.

Supply

Packaging – Emcrete Elastomeric Concrete is sold by the unit. Each unit holds of premeasured amounts of the liquids (Parts A & B, and Emprime) as well as silica-free aggregate.

Yield*– 1 Unit: 9,766 cubic cm (596 cubic inches)

*account for a 5% waste factor

Performance Properties

IMPORTANT: When comparing elastomeric concrete materials it is vital to compare the data of the fully mixed material. Resin-only data is irrelevant as the material is not used without aggregate. Aggregate increases compressive strength at the expense of flexibility and brittleness. Heavy aggregate loading, while it reduces cost, is detrimental to performance of the material as an impact-absorbing nosing and patching material. The following are properties of Emcrete (resins and silica-free aggregate) at as-supplied ratios. (See page 2)

EMSEAL JOINT SYSTEMS, LTD 25 Bridle Lane, Westborough, MA 01581 USA
EMSEAL, LLC 111 Royal Group Crescent, Woodbridge, ON L4H 1X9 Canada

PH: 508.836.0280 **FX:** 508.836.0281
PH: 416.740.2090 **FX:** 416.740.0233

Physical Property	Value	Test Method
Adhesion (primed concrete) Adhesion (primed steel) Adhesion (primed galvanized steel)	413 psi 492 psi 417 psi	ASTM D7234 ASTM D7234 ASTM D7234
Tensile Strength Elongation	651 psi 20%	ASTM D412 ASTM D412
Compressive Strength Compressive Modulus	>4000 psi 11.27 ksi	ASTM D695 ASTM D695
Hardness (Shore D) Hardness (Shore A)	57 98	ASTM D2240 ASTM D2240
Viscosity @ 50 rpm (mixed resin)	1560 cP	ASTM D4847
Impact Testing —Ball Drop**	No Failure at 69°F (20°C) No Failure at -4°F (-20°C)	ASTM D3029-95 ASTM D3029-95

***1-pound steel ball dropped onto 3/8-inch thick (8mm) x 2 3/4-inch diameter (70mm) disk from 17 feet (5.3m)*

CAD & Guide Specs

Guide specifications and CAD details are available online at emseal.com or by contacting EMSEAL.

Warranty

Standard or project-specific warranties are available from EMSEAL on request.

Availability & Price

Emcrete is available for shipment internationally. Prices are available from local representatives and/or directly from the manufacturer. EMSEAL reserves the right to modify or withdraw any product without prior notice.

Emcrete Applications

Figure 1: Emcrete Used as Expansion Joint Nosing Material

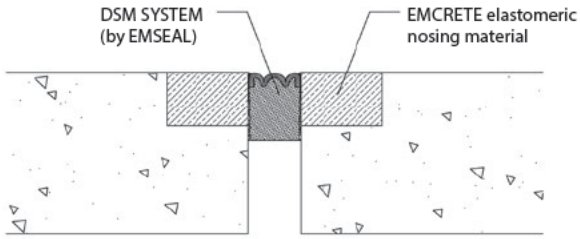


Figure 2: Emcrete Used as Concrete Patching Material

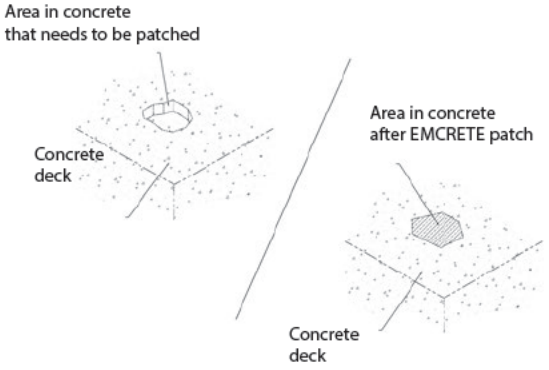
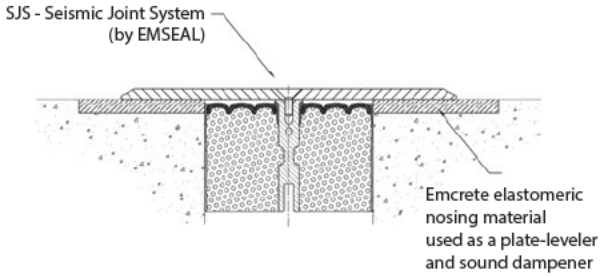


Figure 3: Emcrete Used with SJS System as a Plate-Leveler and Sound Dampener



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PH: 508.836.0280 **FX:** 508.836.0281
PH: 416.740.2090 **FX:** 416.740.0233

EMSEAL Safety Data Sheet Product Package

Emcrete

031319a

EMSEAL
EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough, MA 01581
www.emseal.com

Safety Data Sheet

Version 3c

Issue Date 19-Jan-2015 **Rev. Date** March 13, 2019

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product Identifier

Product name EMCRETE A

Other Means of Identification

Product Code EMCRETE A
UN/ID no UN3082
None
FOR INDUSTRIAL USE ONLY. This product contains isocyanates.
Restrictions on use: Do not use this product for any use other than intended
Manufacturer Address
EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough,
MA 01581 USA
Company Phone Number 508-836-0280 (9AM - 5PM EST) (M-F)
Emergency Telephone Chemtrec 1-800-424-9300 (24 Hours)

2. Hazards Identification

Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS). This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

EMERGENCY OVERVIEW

DANGER

Hazard Statements Harmful if inhaled

Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause respiratory irritation
May cause damage to organs through prolonged or repeated exposure

Appearance Viscous Dark brown **Physical State** Liquid **Odor** Musty/earthy

Precautionary Statements - Prevention
Use only outdoors or in a well-ventilated area
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves, protective clothing, eye protection, face protection
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust, fumes, or vapors

Precautionary Statements - Response
Get medical advice/attention if you feel unwell
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN: Wash with plenty of soap and water
Take off contaminated clothing and wash before reuse
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container in accordance with local/regional/international regulations

Hazards Not Otherwise Classified (HNOC)

Other Information

No information available

3. Composition/Information on Ingredients

Chemical Name	CAS No	Weight-%	Trade secret
Polymethylene polyphenyl polyisocyanate	9016-87-9	30 - 70	*
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers)	26447-40-5	30 - 70	*

* The exact percentage (concentration) of composition may have been withheld as a trade secret.

4. First Aid Measures

FIRST AID MEASURES

General Advice	In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Do not rub affected area. Immediate medical attention is required.
Skin Contact	Remove material from skin immediately. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician. If breathing has stopped, give artificial respiration. Get medical attention immediately.
Ingestion	If swallowed, call a poison control center or physician immediately. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.
Self-Protection of the First Aider	First Aider: Pay attention to self-protection. Use personal protective equipment as required. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Avoid contact with skin, eyes or clothing.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms	Respiratory tract irritation and mucous membrane irritation. Symptoms include eye and nose irritation, dry or sore throat, runny nose, shortness of breath, wheezing and laryngitis. Coughing and chest pain or tightness may also occur, frequently at night. These symptoms may occur during exposure or may be delayed several hours. Exposure to isocyanates can cause difficulty breathing or asthmatic reaction. Irritation to eye tissue. Tingling, irritation or redness of the skin. If ingested, irritation of the tissues of the mouth, throat and digestive tract. Other symptoms include headache, shortness of breath, nausea, vomiting, burning sensation in the mouth, abdominal pain and vomiting. Onset of symptoms may be delayed.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Note to Physicians	May cause sensitization by inhalation and skin contact. Treat symptomatically. SYMPTOMS MAY BE DELAYED.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, foam, water fog or fine spray. Alcohol resistant foams are preferred for large fires. Use water spray to cool fire-exposed containers

Unsuitable Extinguishing Media	Exercise caution when using water; water contamination of product will generate CO2 gas.

Specific Hazards Arising From the Chemical

During a fire products of combustion be toxic or irritating. See Section 10 for more information. Reacts vigorously with water above 50°C. Closed containers may rupture when heated. Polymeric MDI decomposes rapidly above 204°C.

Hazardous Combustion Products	Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous Decomposition Products for additional information.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Protective Equipment and Precautions for Firefighters

Firefighters should wear full protective gear including self-contained breathing apparatus when fighting chemical fires. Fight fire from protected location or a safe distance. When using water care must be taken since the reaction between water and hot isocyanates can be vigorous.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protection recommended in Section 8. Do not touch or walk through spilled material. Ensure adequate ventilation, especially in confined areas. Extremely slippery when spilled. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Environmental Precautions

Environmental Precautions Do not allow into any sewer, on the ground or into any body of water. See Section 12 for additional Ecological Information.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Do not breathe dust, fumes, or vapors. Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Do not use with incompatible materials such as amines, alcohols, acids, bases, metal compounds, surfactants and water which may react vigorously and/or violently. Do not eat, drink or smoke when using this product. Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Protect from direct sunlight. Protect from moisture. Do not reuse container.

Incompatible Materials Water - Reacts slowly, forming carbon dioxide and inert material comprised of polyureas which could rupture closed containers. Toxic intermediate chemicals can be formed in this reaction. Amines, Alcohols, Acids, Bases, - May react violently with generation of heat. Metal compounds may polymerize with the generation of heat and pressure. Amides, phenols, mercaptans, urethanes, ureas and surface active compounds - May react vigorously or violently with the generation of heat.

8. Exposure Controls/Personal Protection

Control Parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	-	Ceiling: 0.02 ppm Ceiling: 0.2 mg/m³	-

Appropriate Engineering Controls

Engineering Controls	Local exhaust ventilation may be necessary when operations generate airborne concentrations of this material. If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Individual Protection Measures, Such As Personal Protective Equipment

Eye/Face Protection	Wear safety glasses with side shields (or goggles). Face protection shield.
Skin and Body Protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear protective nitrile rubber gloves.
Respiratory Protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Wash face, hands and any exposed skin thoroughly after handling. Take off all contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Liquid		
Appearance	Viscous	**Odor**	Musty/earthy
Color	Dark brown	**Odor Threshold**	No information available

Property	Values	Remarks • Method
pH	No information available	
Melting Point/Freezing Point	No information available	
Boiling Point/Boiling Range	> 200 °C	
Flash Point	> 220 °C	
Evaporation Rate	No information available	
Flammability (Solid, Gas)	No information available	
Flammability Limits in Air		
Upper Flammability Limits	No information available	
Lower Flammability Limit	No information available	
Vapor Pressure	10-4 mmHg @ 40°C	
Vapor Density	No information available	
Specific Gravity	1.25	
Water Solubility	Insoluble in water	
Solubility in Other Solvents	No information available	
Partition Coefficient	No information available	
Autoignition Temperature	No information available	
Decomposition Temperature	>300°C	
Kinematic Viscosity	160 cSt	
Dynamic Viscosity	200 cP@ 25°C	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

Other Information

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Density	10.25 pounds/gallon
Bulk Density	No information available

10. Stability and Reactivity

Reactivity

No data available

Chemical Stability
Stable under recommended storage conditions.
Possibility of Hazardous Reactions
Polymeric MDI may undergo uncontrolled exothermic polymerization upon contact with incompatible materials of if heated above 170-204°C. The resulting pressure build up could rupture closed containers. May cause some corrosion to copper alloys and aluminum.
Conditions to Avoid
Avoid moisture. Heat, flames and sparks. Extremes of temperature and direct sunlight.
Incompatible Materials
Water - Reacts slowly, forming carbon dioxide and inert material comprised of polyureas which could rupture closed containers. Toxic intermediate chemicals can be formed in this reaction. Amines, Alcohols, Acids, Bases, - May react violently with generation of heat. Metal compounds may polymerize with the generation of heat and pressure. Amides, phenols, mercaptans, urethanes, ureas and surface active compounds - May react vigorously or violently with the generation of heat.
Hazardous Decomposition Products
Carbon monoxide, Carbon Dioxide (CO_2), Nitrogen oxides (NOx), Hydrogen cyanide, 4,4'-Methylene dianiline can be formed by reaction of MDI with water. Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

11. Toxicological Information

Information on Likely Routes of Exposure

Inhalation Airborne exposures are unlikely to occur unless product is heated or forms an aerosol or mist during pouring, frothing or spraying operations. Polymeric MDI has an extremely low vapor pressure and it is difficult to achieve vapor concentrations necessary for inhalation toxicity testing. The desired vapor concentrations can only be obtained by heating the Polymeric MDI source. Some people may become sensitized to MDI, causing allergy or asthma symptoms or breathing difficulties if inhaled. High aerosol concentrations could cause inflammation of the lung tissue (chemical pneumonitis), chemical bronchitis with severe asthma-like wheezing, severe coughing spasms and accumulation of fluid in the lungs (pulmonary edema), which could be fatal. Symptoms of pulmonary edema may not appear until several hours after exposure and are aggravated by physical exertion.

Eye Contact May cause irritation.

Skin Contact May cause irritation. Isocyanates can cause skin discoloration (staining) and hardening of the skin after repeated exposures. Skin sensitization, resulting in dermatitis, may occur in some individuals. Cured material may be difficult to remove from skin.

Ingestion Not an expected route of exposure. Swallowing may result in irritation and corrosion of the mouth, throat and digestive tract.

Chemical Name	Oral LD50 (Rat)	Dermal LD50 (Rabbit)	Inhalation LC50
Polymethylene polyphenyl polyisocyanate 9016-87-9	= 49 g/kg (Rat)	> 9400 mg/kg (Rabbit)	= 490 mg/m³ (Rat) 4 h
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	> 7400 mg/kg (Rat)	> 6200 mg/kg (Rabbit)	= 0.369 mg/L (Rat) 4 h

Information on toxicological effects

No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization May cause sensitization by inhalation and skin contact. Isocyanates are known to be strong sensitizers.

Germ Cell Mutagenicity No information available.

Carcinogenicity This material does not contain any component that is considered a human carcinogen by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), OSHA or NTP (National Toxicology Program). IARC has concluded that Polymeric MDI and MDI are not classifiable as to their carcinogenicity to humans (Group 3).

Chemical Name	ACGIH	IARC	NTP	OSHA
Polymethylene polyphenyl polyisocyanate 9016-87-9		Group 3		
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5		Group 3		

IARC (International Agency for Research on Cancer)
Group 3 - Not classifiable as to its carcinogenicity to humans

Reproductive Toxicity No information available.

STOT - Single Exposure No information available.

STOT - Repeated Exposure Causes damage to organs through prolonged or repeated exposure if inhaled. May cause disorder and damage to the. Respiratory System.

Chronic Toxicity Polymeric MDI is a severe respiratory irritant. Long-term, low-level exposure could cause severe, permanent respiratory impairment. Respiratory sensitization can develop in people working with Polymeric MDI or its main component Methylene diphenyl diisocyanate (MDI). Sensitized people react to very low levels of MDI (as low as 0.0014 ppm) that have no effect on unsensitized people. Symptoms mimic a cold, hay fever or the flu and may occur immediately upon exposure or may be delayed. MDI and other isocyanates may also cause hypersensitivity pneumonitis, another allergic lung disease, which is characterized by symptoms such as shortness of breath, fever, tiredness, non-productive cough, and chills.

Target Organ Effects Respiratory System, Long-term, low-level exposure may cause severe, permanent respiratory impairment.

Aspiration Hazard No information available.

Numerical Measures of Toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 18253 mg/kg

ATEmix (dermal) 8148 mg/kg

ATEmix (inhalation-dust/mist) 0.1 mg/l

ATEmix (inhalation-vapor) 0.446 mg/l

Inhalation LC50 NOTE: The substance was tested in a form (i.e. specific particle size distribution) that is different from the forms in which the substance is placed on the market and in which it can reasonably be expected to be used. Therefore a modified classification for acute inhalation toxicity is justified.

12. Ecological Information

Ecotoxicity

No information available
100% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	3230: 96 h Skeletonema costatum mg/L EC50			1000: 24 h Daphnia magna mg/L EC50

Persistence and Degradability
No information available

Chemical Name	Partition Coefficient
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	4.5

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container.

14. Transport Information

DOT Not regulated (If shipped in NON BULK packaging by ground transport)

UN/ID no UN3082
Proper Shipping Name Environmentally Hazardous Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate)
Hazard Class 9
Packing group III

ICAO (air) Not regulated

IATA Not regulated

IMDG Not regulated

Special precautions Bulk containers (>5000 lbs)

15. Regulatory Information

International Inventories

TSCA All components of this product are either exempt or included on the TSCA Inventory in compliance with the Toxic Substances Control Act.

Legend:
TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*
DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Polymethylene polyphenyl polyisocyanate - 9016-87-9	9016-87-9	30 - 70	1.0
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) - 26447-40-5	26447-40-5	30 - 70	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard Yes

Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Polymethylene polyphenyl polyisocyanate 9016-87-9	X		
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	X	X	

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other Information

HMIS **Health Hazards** 2* **Flammability** 1 **Physical Hazards** 1 **Personal Protection** X

Chronic Hazard Star Legend ** = Chronic Health Hazard*

Prepared by EMSEAL Compliance KP/sp
Issue Date 19-Jan-2015

Revision Date 14-May-2018

Revision note

No information available

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

EMSEAL
EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough, MA 01581
www.emseal.com

Safety Data Sheet

Issue Date 25-Feb-2015 **Rev. Date** March 13, 2019 **Version** 2b

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product Identifier

Product name EMCRETE B

Other Means of Identification

Product Code EMCRETE B
Product Technology Potting base
Document EMCRETE B
None
FOR INDUSTRIAL USE ONLY. Potting base.
Restrictions on use: Do not use this product for any use other than intended.
Manufacturer Address
EMSEAL Joint Systems, Ltd.
25 Bridle Lane
Westborough, MA 01581 USA
Company Phone Number 508-836-0280 (9AM - 5PM EST) (M-F)
Emergency Telephone Chemtrec 1-800-424-9300 (24 Hours)

2. Hazards Identification

Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS). This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Oral	Category 4
Serious eye damage/eye irritation	Category 2A
Skin sensitization	Category 1
Carcinogenicity	Category 2. Carbon Black (CAS 1333-86-4) poses extremely low respirable carcinogen risk when encapsulated in a polymeric liquid.

EMERGENCY OVERVIEW

WARNING

Hazard Statements
Harmful if swallowed
May cause an allergic skin reaction

Suspected of causing cancer

Appearance Opaque Black **Physical State** Liquid **Odor** Mild

Precautionary Statements - Prevention
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Avoid release to the environment
Wear protective gloves, protective clothing, eye protection, face protection
In case of inadequate ventilation wear respiratory protection

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
If on skin: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
If inhaled, remove person to fresh air and keep comfortable for breathing
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store locked up
Store in tightly closed containers to prevent moisture contamination.
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container in accordance with local/regional/international regulations

Hazards Not Otherwise Classified (HNOC)

Other Information

Harmful to aquatic life with long lasting effects, Harmful to aquatic life
94.7352% of the mixture consists of ingredient(s) of unknown toxicity

3. Composition/Information on Ingredients

Chemical Family Potting base

Chemical Name	CAS No	Weight-%	Trade secret
Carbon Black	1333-86-4	1 - 3	*
Dimethylthiotoluenediamine	Proprietary	1 - 5	*

* The exact percentage (concentration) of composition may have been withheld as a trade secret.

4. First Aid Measures

FIRST AID MEASURES

General Advice	Use first aid treatment according to the nature of the injury. For further assistance, contact your local Poison Control Center. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists: Get medical advice/attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Ingestion	Not an expected route of exposure. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person.
Self-Protection of the First Aider	First Aider: Pay attention to self-protection. Use personal protective equipment as required.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms	No information available.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Note to Physicians	Treat symptomatically.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Use CO2, dry chemical, or foam

Unsuitable Extinguishing Media	Caution: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising From the Chemical

Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water ways. Dike for water control.

Hazardous Combustion Products	Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous Decomposition Products for additional information.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Ventilate affected area. Extremely slippery when spilled.

Other Information Use personal protective equipment as required.

For Emergency Responders Use personal protective equipment as required.

Environmental Precautions

Environmental Precautions See Section 12 for additional Ecological Information. Do not allow into any sewer, on the ground or into any body of water.

Methods and Material for Containment and Cleaning Up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Pick up and transfer to properly labeled containers.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Handle in accordance with good industrial hygiene and safety practice.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store and handle away from heat, flames and oxidizing materials. Protect from moisture.

Incompatible Materials Strong oxidizing agents. Strong acids. Strong bases. Water.

8. Exposure Controls/Personal Protection

Control Parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Carbon Black 1333-86-4	TWA: 3 mg/m³ inhalable fraction	TWA: 3.5 mg/m³ (vacated) TWA: 3.5 mg/m³	IDLH: 1750 mg/m³ TWA: 3.5 mg/m³ TWA: 0.1 mg/m³ Carbon black in presence of Polycyclic aromatic hydrocarbons PAH

Appropriate Engineering Controls

Engineering Controls Showers
Eyewash stations
Ventilation systems

Individual Protection Measures, Such As Personal Protective Equipment

Eye/Face Protection Splash Goggles.

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Liquid		
Appearance	Opaque	**Odor**	Mild
Color	Black	**Odor Threshold**	No information available

Property	**Values**	**Remarks • Method**
pH	No information available	
Melting Point/Freezing Point	< 0 °C	
Boiling Point/Boiling Range	> 300 °C	
Flash Point	> 150 °C	CC (closed cup)
Evaporation Rate	< 1 (Butyl acetate = 1)	
Flammability (Solid, Gas)	No information available	
Flammability Limits in Air		
Upper Flammability Limits	No information available	
Lower Flammability Limit	No information available	
Vapor Pressure	< 1 mmHg @ 25°C	
Vapor Density	> 1 (air = 1)	
Specific Gravity	0.98	
Water Solubility	Slightly soluble	
Solubility in Other Solvents	No information available	
Partition Coefficient	No information available	
Autoignition Temperature	No information available	
Decomposition Temperature	No information available	
Kinematic Viscosity	1,887 cSt	
Dynamic Viscosity	1,850 cPs @ 25°C	
Explosive Properties	No information available	
Oxidizing Properties	No information available	

Other Information

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	0.0024 LBS/GAL 0.288 GRAMS/LITER
Density	8.2 pounds/gallon
Bulk Density	No information available

10. Stability and Reactivity

Reactivity

No data available

Chemical Stability
Stable under recommended storage conditions.
Possibility of Hazardous Reactions
Hazardous polymerization does not occur.

hazardous polymerization	None under normal processing.

Conditions to Avoid
Keep out of reach of children. Extremes of temperature and direct sunlight. Mixture with or exposure to incompatible materials. Avoid moisture.
Incompatible Materials
Strong oxidizing agents. Strong acids. Strong bases. Water.
Hazardous Decomposition Products
Carbon monoxide. Carbon Dioxide (CO_2). Aromatic hydrocarbons. May emit toxic fumes under fire conditions. Nitrogen oxides (NO_x). Sulfur oxides. Hydrocarbons. Formaldehyde.

11. Toxicological Information

Information on Likely Routes of Exposure

Product Information The product has not been tested

Inhalation Remove to fresh air.

Eye Contact Contact with eyes may cause irritation.

Skin Contact May cause irritation.

Ingestion Not an expected route of exposure. Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon Black 1333-86-4	> 15400 mg/kg (Rat)	> 3 g/kg (Rabbit)	-

Information on toxicological effects

No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Serious eye damage/eye irritation Irritating to eyes.
Irritation Irritating to eyes, respiratory system and skin.
Sensitization May cause sensitization by skin contact.
Germ Cell Mutagenicity No information available.
Carcinogenicity Carbon Black (CAS 1333-86-4) poses extremely low respirable carcinogenic risk when encapsulated in a polymeric liquid.

Chemical Name	ACGIH	IARC	NTP	OSHA
Carbon Black 1333-86-4	A3	Group 2B		X

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive Toxicity No information available.
STOT - Single Exposure May cause gastric disturbances if swallowed. Experiments have shown liver and kidney effects in laboratory animals.
STOT - Repeated Exposure No information available.
Aspiration Hazard No information available.

Numerical Measures of Toxicity - Product Information

Unknown Acute Toxicity 94.7352% of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document
ATEmix (oral) 1723 mg/kg
ATEmix (dermal) 5501 mg/kg

12. Ecological Information

Ecotoxicity

No information available
98.0846% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Carbon Black 1333-86-4				5600: 24 h Daphnia magna mg/L EC50

Persistence and Degradability
No information available

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Disposal of Wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging	Do not reuse container.

14. Transport Information

DOT	Not regulated
ICAO (air)	Not regulated
IATA	Not regulated
IMDG	Not regulated

15. Regulatory Information

International Inventories

TSCA	All components of this product are either exempt or included on the TSCA Inventory in compliance with the Toxic Substances Control Act.

Legend:
TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*
DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

The following chemicals may be contained in this product in de minimis amounts not required for listing in section 3. However, these chemicals do appear on some state Right-to-Know (RTK) and/or other hazardous substance lists. Please check your state's listings for more information.

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Carbon Black - 1333-86-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Carbon Black 1333-86-4	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other Information

HMIS **Health Hazards** 1 **Flammability** 1 **Physical Hazards** 0 **Personal Protection** X

Prepared by EMSEAL Compliance KP/sp
Issue Date 25-Feb-2015
Revision Date 14-May-2018

Revision note

No information available

Disclaimer

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End of Safety Data Sheet

Safety Data Sheet

EMSEAL

EMSEAL Joint Systems, Ltd.

25 Bridle Lane, Westborough, MA 01581

www.emseal.com

Issue Date 20-Jul-2017 **Revn Date** March 13, 2019 **Version** 2

Full Disclosure Statement - The Supplier did NOT fully disclose the formulation of this product

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product Identifier

Product name EMPRIME

Other Means of Identification

Product Code EMPRIME
UN/ID no UN3082
None
FOR INDUSTRIAL USE ONLY. This product contains isocyanates.
Restrictions on use: Do not use this product for any use other than intended
Manufacturer Address
EMSEAL Joint Systems
25 Bridle Lane
Westboro, MA 01581, USA
Company Phone Number 508-836-0280 (8AM - 5PM EST) (M-F)
Emergency Telephone Chemtrec 1-800-424-9300 (24 Hours)

2. Hazards Identification

Classification

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS). This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

EMERGENCY OVERVIEW

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction
May cause damage to organs through prolonged or repeated exposure (lungs, skin)
Harmful if inhaled

May cause respiratory irritation

Appearance Viscous Clear Amber **Physical State** Liquid **Odor** Musty/earthy

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Keep container tightly closed
Wear protective gloves, protective clothing, eye protection, face protection
Do not breathe dust, fumes, or vapors
Do not eat, drink or smoke when using this product

Precautionary Statements - Response
IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
If skin irritation or rash occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
In case of fire: Use CO_2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container in accordance with local/regional/international regulations

Hazards Not Otherwise Classified (HNOC)

Other Information

May be harmful in contact with skin
No information available

3. Composition/Information on Ingredients

Chemical Name	CAS No	Weight-%	Trade secret
Polymethylene polyphenyl polyisocyanate	9016-87-9	15 - 50	*
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers)	26447-40-5	15 - 50	*

* The exact percentage (concentration) of composition may have been withheld as a trade secret.

4. First Aid Measures

FIRST AID MEASURES

General Advice — In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

Eye Contact — Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Do not rub affected area. Immediate medical attention is required.

Skin Contact — Remove material from skin immediately. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. Get medical attention if irritation develops and persists.

Inhalation — IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician. If breathing has stopped, give artificial respiration. Get medical attention immediately.

Ingestion — If swallowed, call a poison control center or physician immediately. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

Self-Protection of the First Aider — First Aider: Pay attention to self-protection. Use personal protective equipment as required. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Avoid contact with skin, eyes or clothing.

Most Important Symptoms and Effects, Both Acute and Delayed

Symptoms — Respiratory tract irritation and mucous membrane irritation. Symptoms include eye and nose irritation, dry or sore throat, runny nose, shortness of breath, wheezing and laryngitis. Coughing and chest pain or tightness may also occur, frequently at night. These symptoms may occur during exposure or may be delayed several hours. Exposure to isocyanates can cause difficulty breathing or asthmatic reaction. Irritation to eye tissue. Tingling, irritation or redness of the skin. If ingested, irritation of the tissues of the mouth, throat and digestive tract. Other symptoms include headache, shortness of breath, nausea, vomiting, burning sensation in the mouth, abdominal pain and vomiting. Onset of symptoms may be delayed.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Note to Physicians — May cause sensitization by inhalation and skin contact. Treat symptomatically. SYMPTOMS MAY BE DELAYED.

5. Fire-Fighting Measures

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder, foam, water fog or fine spray. Alcohol resistant foams are preferred for large fires. Use water spray to cool fire-exposed containers

Unsuitable Extinguishing Media Exercise caution when using water; water contamination of product will generate CO_2 gas.

Specific Hazards Arising From the Chemical

During a fire products of combustion be toxic or irritating. See Section 10 for more information. Reacts vigorously with water above 50°C. Closed containers may rupture when heated. Polymeric MDI decomposes rapidly above 204°C.

Hazardous Combustion Products Irritating or toxic substances may be emitted upon burning, combustion or decomposition. See Section 10 Hazardous Decomposition Products for additional information.

Explosion Data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective Equipment and Precautions for Firefighters

Firefighters should wear full protective gear including self-contained breathing apparatus when fighting chemical fires. Fight fire from protected location or a safe distance. When using water care must be taken since the reaction between water and hot Polymeric MDI can be vigorous.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protection recommended in Section 8. Do not touch or walk through spilled material. Ensure adequate ventilation, especially in confined areas. Extremely slippery when spilled.

For Emergency Responders Remove all sources of ignition.

Environmental Precautions

Environmental Precautions Do not allow into any sewer, on the ground or into any body of water. See Section 12 for additional Ecological Information.

Methods and Material for Containment and Cleaning Up

Methods for Containment A vapor suppressing foam may be used to reduce vapors. Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Wash area with liquid detergent in water. Allow material to stand for 48 hours to let carbon dioxide gas escape.

Prevention of Secondary Hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. Handling and Storage

Precautions for Safe Handling

Advice on Safe Handling Do not breathe dust, fumes, or vapors. Avoid contact with skin and eyes. Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Do not use with incompatible materials such as amines, alcohols, acids, bases, metal compounds, surfactants and water which may react vigorously and/or violently. Do not eat, drink or smoke when using this product.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from direct sunlight. Protect from moisture. Do not reuse container.

Incompatible Materials Water - Reacts slowly, forming carbon dioxide and inert material comprised of polyureas which could rupture closed containers. Toxic intermediate chemicals can be formed in this reaction. Amines, Alcohols, Acids, Bases, - May react violently with generation of heat. Metal compounds may polymerize with the generation of heat and pressure. Amides, phenols, mercaptans, urethanes, ureas and surface active compounds - May react vigorously or violently with the generation of heat.

8. Exposure Controls/Personal Protection

Control Parameters

Exposure Guidelines This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	-	Ceiling: 0.02 ppm Ceiling: 0.2 mg/m³	-

Appropriate Engineering Controls

Engineering Controls Local exhaust ventilation may be necessary when operations generate airborne concentrations of this material. If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection.

Individual Protection Measures, Such As Personal Protective Equipment

Eye/Face Protection Wear safety glasses with side shields (or goggles). Face protection shield.

Skin and Body Protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear protective nitrile rubber gloves.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Wash face, hands and any exposed skin thoroughly after handling. Take off all contaminated clothing and wash it before reuse.

9. Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Physical State	Liquid		
Appearance	Viscous Clear	**Odor**	Musty/earthy
Color	Amber	**Odor Threshold**	No information available

Property	Values	Remarks • Method
pH	No information available	
Melting Point/Freezing Point	No information available	
Boiling Point/Boiling Range	93 °C	
Flash Point	>130 °C	CC (closed cup)

Evaporation Rate	No information available
Flammability (Solid, Gas)	No information available
Flammability Limits in Air	
Upper Flammability Limits	No information available
Lower Flammability Limit	No information available
Vapor Pressure	No information available
Vapor Density	4.01
Specific Gravity	1.065
Water Solubility	partially soluble
Solubility in Other Solvents	No information available
Partition Coefficient	No information available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Kinematic Viscosity	No information available
Dynamic Viscosity	No information available
Explosive Properties	No information available
Oxidizing Properties	No information available

Other Information

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Density	8.861 pounds/gallon
Bulk Density	No information available

10. Stability and Reactivity

Reactivity

No data available

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Polymeric MDI may undergo uncontrolled exothermic polymerization upon contact with incompatible materials of if heated above 170-204°C. The resulting pressure build up could rupture closed containers. May cause some corrosion to copper alloys and aluminum.

Conditions to Avoid

Avoid moisture, extremes of temperature and direct sunlight.

Incompatible Materials

Water - Reacts slowly, forming carbon dioxide and inert material comprised of polyureas which could rupture closed containers. Toxic intermediate chemicals can be formed in this reaction. Amines, Alcohols, Acids, Bases, - May react violently with generation of heat. Metal compounds may polymerize with the generation of heat and pressure. Amides, phenols, mercaptans, urethanes, ureas and surface active compounds - May react vigorously or violently with the generation of heat.

Hazardous Decomposition Products

Carbon monoxide, Carbon Dioxide (CO2), Nitrogen oxides (NOx), Hydrogen cyanide, 4,4'-Methylene dianiline can be formed by reaction of MDI with water. Thermal decomposition can lead to release of toxic/corrosive gases and vapors.

11. Toxicological Information

Information on Likely Routes of Exposure

Inhalation

Airborne exposures are unlikely to occur unless product is heated or forms an aerosol or mist during pouring, frothing or spraying operations. Polymeric MDI has an extremely low vapor pressure and it is difficult to achieve vapor concentrations necessary for inhalation toxicity testing. The desired vapor concentrations can only be obtained by heating the Polymeric MDI source. Some people may become sensitized to MDI, causing allergy or asthma symptoms or breathing difficulties if inhaled. High aerosol concentrations could cause inflammation of the lung tissue (chemical pneumonitis), chemical bronchitis with severe asthma-like wheezing, severe coughing spasms and accumulation of fluid in the lungs (pulmonary edema), which could be fatal. Symptoms of pulmonary edema may not

appear until several hours after exposure and are aggravated by physical exertion.

Eye Contact May cause irritation.

Skin Contact May cause irritation. Isocyanates can cause skin discoloration (staining) and hardening of the skin after repeated exposures. Skin sensitization, resulting in dermatitis, may occur in some individuals. Cured material may be difficult to remove from skin.

Ingestion Not an expected route of exposure. Swallowing may result in irritation and corrosion of the mouth, throat and digestive tract.

Chemical Name	Oral LD50 (Rat)	Dermal LD50 (Rabbit)	Inhalation LC50
Polymethylene polyphenyl polyisocyanate 9016-87-9	= 49 g/kg (Rat)	> 9400 mg/kg (Rabbit)	= 490 mg/m³ (Rat) 4 h
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	> 7400 mg/kg (Rat)	> 6200 mg/kg (Rabbit)	= 0.369 mg/L (Rat) 4 h

Information on toxicological effects

No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Irritating to skin.
Serious eye damage/eye irritation Risk of serious damage to eyes.
Irritation Irritating to eyes, respiratory system and skin.
Sensitization May cause sensitization by inhalation and skin contact. Isocyanates are known to be strong sensitizers.
Germ Cell Mutagenicity No information available.
Carcinogenicity No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Polymethylene polyphenyl polyisocyanate 9016-87-9		Group 3		
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5		Group 3		

IARC (International Agency for Research on Cancer)
Group 3 - Not classifiable as to its carcinogenicity to humans

Reproductive Toxicity No information available.
STOT - Single Exposure May cause disorder and damage to the. Respiratory System.
STOT - Repeated Exposure Causes damage to organs through prolonged or repeated exposure if inhaled. May cause disorder and damage to the. Respiratory System.
Target Organ Effects Respiratory System.
Aspiration Hazard No information available.

Numerical Measures of Toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 6723 mg/kg
ATEmix (dermal) 3227 mg/kg
ATEmix (inhalation-dust/mist) 0.2 mg/l

12. Ecological Information

Ecotoxicity

50% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	3230: 96 h Skeletonema costatum mg/L EC50			1000: 24 h Daphnia magna mg/L EC50

Persistence and Degradability
No information available

Chemical Name	Partition Coefficient
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	4.5

Other Adverse Effects
No information available

13. Disposal Considerations

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Do not reuse container.

14. Transport Information

DOT Not regulated (If shipped in NON BULK packaging by ground transport)

UN/ID no UN3082
Proper Shipping Name Environmentally Hazardous Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate)
Hazard Class 9
Packing group III

ICAO (air) Not regulated

IATA Not regulated

IMDG Not regulated

Special precautions Bulk containers (>5000 lbs)

15. Regulatory Information

International Inventories
TSCA All components of this product are either exempt or included on the TSCA Inventory in compliance with the Toxic Substances Control Act.

Legend:
TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*

DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Polymethylene polyphenyl polyisocyanate - 9016-87-9	9016-87-9	15 - 50	1.0
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) - 26447-40-5	26447-40-5	15 - 50	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	Yes

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Polymethylene polyphenyl polyisocyanate 9016-87-9	X		
4,4'-METHYLENEBIS(PHENYL ISOCYANATE)(mixed isomers) 26447-40-5	X	X	

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other Information

HMIS	**Health Hazards** 2*	**Flammability** 1	**Physical Hazards** 1	**Personal Protection** X

Chronic Hazard Star Legend * = *Chronic Health Hazard*

Prepared by EMSEAL Compliance
Issue Date 20-Jul-2017
Revision Date 14-May-2018

Revision note

No information available

Disclaimer

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

EMSEAL
EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough, MA 01581
www.emseal.com

Safety Data Sheet

Version 1.2 | Rev Date 05/14/2018 | Print Date 05/14/2018

SECTION 0. GENERAL INFORMATION

This item meets the definition of article in the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

THIS PRODUCT IS A COMPONENT OF THE EMCRETE SYSTEM. IT HAS BEEN SOURCED FROM AN OEM. IT IS NOT INTENDED FOR ANY USE HEREIN OTHER THAN ITS EMCRETE APPLICATION. CONTENT IN THIS SHEET IS PROVIDED BY AND VERIFIED BY THE OEM SOURCE.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product name Continuous Filament Glass Fiber

Other Means of Identification

Product Code Filament Glass Fiber

This item meets the definition of article in the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Manufacturer Address
EMSEAL Joint Systems, Ltd.
25 Bridle Lane, Westborough,
MA 01581 USA

Company Phone Number 508-836-0280 (9AM - 5PM EST) (M-F)
Emergency Telephone Chemtrec 1-800-424-9300 (24 Hours)

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS Label element

Not a hazardous substance or mixture.

Other hazards

Temporary mechanical abrasion (itching) of skin, eyes and respiratory tract may occur upon exposure to particles during handling of this product and cannot occur unless there is direct contact. Abrasion effects should subside after cessation of exposure.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature

CFGF products are typically made of an endless E-glass filament with a diameter of more than 8 µm and of parallel orientation. A surface treatment (sizing) is applied to the filaments which are gathered to form a strand. The strand is further processed into a specific product design. The sizing is a polymer based mixture consisting of i.e. film former(s), coupling agent(s) and other processing aids. The sizing content is generally below 2%.

Hazardous components

Non-hazardous according to 29 CFR 1910.1200, when used as intended.

SECTION 4. FIRST AID MEASURES

General advice : Get medical attention if symptoms occur.

If inhaled	:	Move to fresh air. If symptoms persist, call a physician.
In case of skin contact	:	Take off all contaminated clothing immediately. If on skin, rinse well with water. Get medical attention if irritation develops and persists.
In case of eye contact	:	In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.
If swallowed	:	If symptoms persist, call a physician. Rinse mouth with water to remove dust or fibers and drink plenty of water to help reduce irritation.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation.
Methods and materials for containment and cleaning up	:	Take up mechanically. Pick up and arrange disposal without creating dust.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
Conditions for safe storage	:	Keep in a dry, cool place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Nuisance dust	Not Assigned	TWA (Total particulate)	15 mg/m3	OSHA

		TWA (Respirable fraction)	5 mg/m3	OSHA

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hand protection
Remarks : For prolonged or repeated contact use protective gloves.

Eye protection : Safety glasses

Skin and body protection : Long sleeved clothing

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : solid

Odour : slight

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : No decomposition if stored and applied as directed.

Possibility of hazardous reactions : Stable under recommended storage conditions.
No hazards to be specially mentioned.

Conditions to avoid : No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Further information

During cutting, milling or other processing of these products, particles may be generated that does not represent a health hazard if below the recommended exposure limits for particles not otherwise regulated (PNOR) (inhalable and respirable fraction). Temporary mechanical abrasion (itching) of skin, eyes and respiratory tract may occur upon exposure to particles during handling of this product and cannot occur unless there is direct contact. Abrasion effects should subside after cessation of exposure. Continuous filament glass fibers do not possess cleavage planes which would allow them to split length-wise into fibers with smaller diameter; rather they break across the fiber, resulting in fibers which are of the same diameter as the original fiber. Microscopic examination of dust from highly chopped and pulverised glass demonstrated the presence of small amounts of respirable dust particles. Among these respirable particles, some

were fiber-like in terms of lenghth /diameter ratio (so-called "shards"). It can be clearly observed, however, that they are not regular shaped fibers but irregular shaped particles with fiber-like dimensions. To the best of our knowledge, the exposure levels of these fiber-like dust particles measured at our manufacturing plants are, on an order of magnitude, between 50 to 1000 times below existing occupational exposure limits. Exposures will vary according to environmental and process conditions and exposure duration.

SECTION 12. ECOLOGICAL INFORMATION

Further information

Due to the properties of the product, a hazard to the environment may not be expected.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Disposal of residual product : In accordance with local and national regulations.

SECTION 14. TRANSPORT INFORMATION

International transport regulations

These products are not classified as dangerous goods according to international transport regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

California Prop 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

TSCA : All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

DSL : All components of this product are on the Canadian DSL.

Other regulations
These products are considered articles under both U.S. and international products and as such, these products do not require registration or notification on the various country-specific inventories.

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safe Use Instruction is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

SAFETY DATA SHEET

SDS No: 013-USM-GHS

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Identifier
Product Name: Nepheline Syenite – various grades

Synonyms: Anhydrous sodium potassium alumino silicate, Inorganic feldspathic mineral

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:
Product Use: Various commercial and industrial uses

Supplier:
EMSEAL
25 Bridle Lane
Westborough, MA 01581

Emergency Telephone Number
(508) 836-0280

Telephone Number for Information
(508) 836-0280

SDS Date of Preparation/Revision: May 2018

SECTION 2: HAZARDS IDENTIFICATION

GHS/ Hazcom 2012 Classification:

Physical:	**Health:**	**Environmental**
Not Hazardous	Not Hazardous	Not Hazardous

GHS/Hazcom 2012 Label: Not hazardous in accordance with 29CFR 1910.1200 (Hazcom 2012) and the GHS.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

CAS#	Component	Percentage
37244-96-5	Nepheline Syenite	100%

SECTION 4: FIRST AID MEASURES

Gross Inhalation: Remove victim to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult have qualified personnel administer oxygen. Get prompt medical attention.

Skin Contact: No first aid should be needed since dermal contact with this product does not affect the skin. Wash exposed skin with soap and water before breaks and at the end of the shift.

Eye Contact: Flush the eyes immediately with large amounts of running water, lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.

Ingestion: If large amounts are swallowed, get immediate medical attention.

Most Important Symptoms and Effects, Both Acute and Delayed: May cause eye irritation with redness and tearing.

Indication of immediate medical attention and Special Treatment Needed: None required.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media: This product will not burn but is compatible with all extinguishing media. Use any media that is appropriate for the surrounding fire.

Specific Hazards Arising from the Chemical:

Unusual Fire and Explosion Hazards: Not flammable or combustible. Dry powders may accumulate static charge in handling which can be a source of ignition for flammable atmospheres.
Hazardous Combustion Products: None.

Special Protective Equipment and Precautions for Fire-Fighters: None required with respect to this product. Firefighters should always wear self-contained breathing apparatus for fires indoors or in confined areas.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective equipment.

Environmental Precautions: Report spills and releases as required to appropriate authorities.

Methods and Material for Containment/Cleanup: If uncontaminated, collect using dustless method (HEPA vacuum or wet method) and place in appropriate container for use. If contaminated: a) use appropriate method for the nature of contamination, and b) consider possible toxic or fire hazards associated with the contaminating substances. Collect for appropriate disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling: Avoid breathing dust. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust. Use good housekeeping in storage and use areas to prevent accumulation of dust in work area.

Use adequate ventilation and dust collection. Maintain, use, clean and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain product residue and must be handled in accordance with the provisions of this Material Safety Data Sheet. **WARN and TRAIN** employees in accordance with state and federal regulations.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS AND USERS IN CASE OF RESALE) BY POSTING, AND OTHER MEANS, OF THE HAZARDS AND OSHA PRECAUTIONS AND ANY OTHER APPLICABLE REGULATORY PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

Dust can accumulate electrostatic charges due to friction from transfer and mixing operations and cause an electrical spark (ignition source) which can ignite flammable liquids and atmospheres. Provide adequate precautions when adding this product to flammable and combustible mixtures like paints and coating, such as electrical grounding and bonding, inert atmosphere or non-sparking tools. However, bonding and grounds may not eliminate the hazard for static accumulation.

Conditions for Safe Storage, Including any Incompatibilities: Store in a dry location.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Definitions:
NIOSH means National Institute for Occupational Safety and Health.
REL means the NIOSH Recommended Exposure Limit.

TLV means American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value.
TWA means time-weighted average.

Ontario OEL – 10 mg/ m^3 (total dust)
PEL - 5 mg/m^3 TWA (respirable fraction), 15 mg/m^3 TWA (total dust) as Particulates not Otherwise Regulated
TLV- None established (refer to ACGIH guidance for Particulates (insoluble or poorly soluble) Not Otherwise Specified)
MSHA – 10 mg/m^3 TWA as Nuisance Particulates

Appropriate Engineering Controls: Use local exhaust as required to maintain exposures as far as possible below applicable occupational exposure limits. See also ACGIH "Industrial Ventilation - A Manual for Recommended Practice" (current edition). Control of exposure to dust must be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general or local exhaust ventilation and substitution of less toxic materials).

Personal Protective Equipment:
Respiratory Protection: When effective engineering controls are not feasible, or while they are being implemented, appropriate respiratory protection must be used. Use appropriate respiratory protection for respirable particulates based on consideration of airborne workplace concentrations and duration of exposure arising from intended end use. Refer to the most recent government and local standards.

Gloves: Protective gloves recommended.

Eye Protection: Safety glasses or goggles recommended.

Other Protective Equipment/Clothing: As appropriate for the work environment. Dusty clothing should be laundered before reuse.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form:	Solid	**Appearance:**	White powder
Viscosity:	Not applicable	**Odor:**	None
pH:	Not applicable	**Odor Threshold:**	Not applicable
Boiling Point/Range:	Not applicable	**Vapor Density:**	Not applicable
Melting point/freezing point:	1223°C / 2233°F	**Evaporation Rate:**	Not applicable
Flammability (solid, gas):	Fully oxidized, will not burn	**Partition coefficient (n-octanol/water):**	Not applicable
Decomposition Temperature:	Not applicable	**Vapor Pressure:**	Not applicable
Flash Point:	Not applicable	**Relative Density:**	2.61
Lower Explosion Limit:	Not applicable	**Solubilities:**	Insoluble in water
Upper Explosion Limit:	Not applicable	**Autoignition Temperature:**	Will not burn

SECTION 10: STABILITY AND REACTIVITY

Reactivity: This product is not reactive under normal conditions of storage and use.

Chemical Stability: This product is stable at normal temperatures.

Possibility of Hazardous Reactions: None known

Conditions to Avoid: None known.

Incompatible Materials: None known

Hazardous Decomposition Products: None known.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Potential Health Effects:

Inhalation: Inhalation of dust may cause irritation of the nose, throat and respiratory passages.

Skin Contact: No adverse effects expected.

Eye Contact: Contact may cause mechanical irritation and possible injury.

Ingestion: No adverse effects expected for normal, incidental ingestion.

Chronic Health Effects: Prolonged overexposure to any nuisance dust may cause lung injury. Symptoms include cough, shortness of breath, and reduced pulmonary function.

Signs and Symptoms of Exposure: Overexposure to nuisance dusts may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath.

Acute Toxicity Values: No acute toxicity data is available for product.

Skin Sensitization: Not a skin sensitizer in animals or humans.

Repeated Dose Toxicity: No specific data is available, however, prolonged overexposure to nuisance dust may cause lung changes.

Carcinogenicity: None of the components of this product are listed as carcinogens or suspected carcinogens by IARC, NTP or OSHA.

Developmental / Reproductive Toxicity: No specific data is available, however, there is no evidence that nepheline syenite exposure has any effect on reproduction.

Genetic Toxicity: No specific data is available, however, there is no evidence that nepheline syenite is a germ cell mutagen.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity: No ecotoxicity data is available. This product is not expected to present an environmental hazard.

Persistence and Degradability: This product is not degradable but not hazardous to the environment.

Bioaccumulative Potential: Not expected to bioaccumulate.

Mobility in Soil: Not applicable.

Results of PBT and vPvB Assessment: None required.

Other Adverse Effects: None known

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

If uncontaminated, dispose as an inert, non-metallic mineral. If contaminated, dispose in accordance with all applicable local, state/provincial and national/ federal regulations in light of the contamination present. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

SECTION 14: TRANSPORT INFORMATION

Not regulated for transportation under IATA/ICAO, IMDG, US DOT, EU ADR, or Canadian TDG Regulations.
Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: None

SECTION 15: REGULATORY INFORMATION

SARA 311/312: Hazard Categories for SARA Section 311/312 Reporting: Not Hazardous

SARA 313 This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under the SARA Section 313 (40 CFR 372): None

CERCLA Section 103 Reportable Quantity: None

California Proposition 65: This product does not contain substances regulated under California Proposition 65.

Toxic Substances Control Act: All of the components of this product are listed on the EPA TSCA Inventory or exempt from premanufacture notification requirements.

European Inventory of Commercial Chemical Substances: All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements.

EU REACH Status: This substance is exempt from REACH registration.

Canadian Environmental Protection Act: All the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

Canadian WHMIS Classification: Not a controlled product

This SDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the SDS contains all of the information required by the CPR.

Japan METI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

Australian Inventory of Chemical Substances: All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Australian National Occupational Health & Safety Commission Status: Not classified as hazardous according to the criteria of Australian National Occupational Health & Safety Commission.

Korea: All of the components of this product are listed on the ECL inventory or exempt from notification requirements.

Philippines: All of the components of this product are listed on the PICCS inventory or exempt from notification requirements.

New Zealand: All of the components of this product are listed on the HSNO inventory or exempt from notification requirements.

China: All of the components of this product are listed on the IECSC inventory or exempt from notification requirements.

Taiwan: All of the components of this product are listed on the CSNN inventory or exempt from notification requirements.

16: OTHER INFORMATION

NFPA Hazard Rating:	Health: 0	Fire: 0	Reactivity: 0
HMIS Hazard Rating:	Health: 0	Fire: 0	Reactivity: 0

References:

Registry for Toxic Effects of Chemical Substances (RTECS), 2014
Patty's Industrial Hygiene and Toxicology
NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002
NTP Twelfth Report on Carcinogens, 2011
Hazardous Substances Data Bank (HSDB), 2014
Toxline: 2014

SDS Date of Preparation/Revision: May 2018

Revision Summary: Conversion to US Hazcom 2012 format – GHS Classification added.